FEB 15 1913

Number 5
Volume XLIV

FEBRUARY, 1913

$2.00 per year
$3.00 with Directory

1868 # TEXTILE WORLD RECORD 1913

Special Features

The Textile Tariff Hearings

The Manufacture of Textilose

The Principles of Warmth in Clothing

An Ad Valorem Wool Tariff

Manufacturing Cotton Crepe

Fifteen Cent Cotton

Fancy Knitting

FEB 15 1913
PERIODICAL DIVISION

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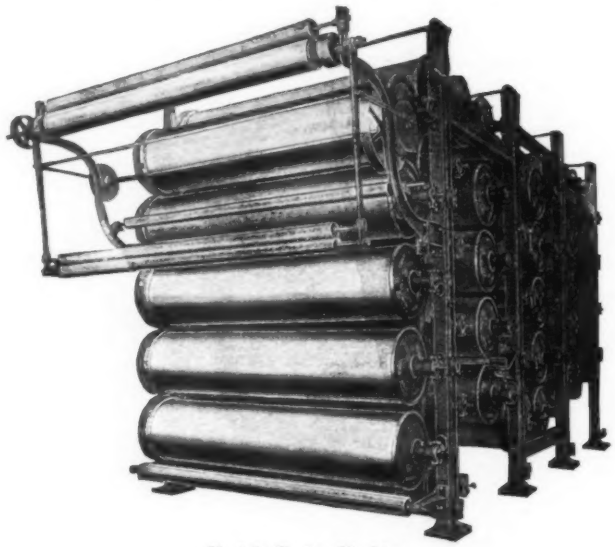

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Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

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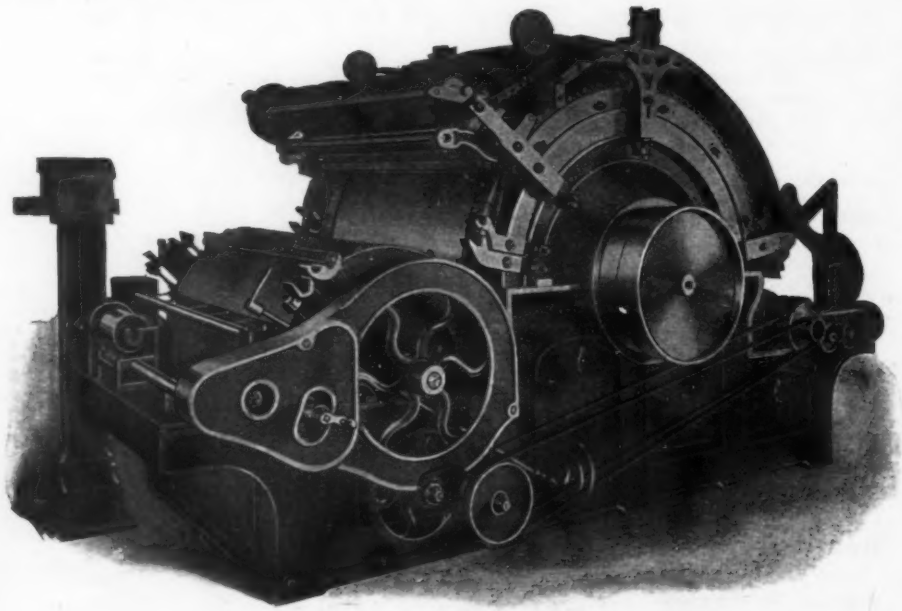

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TEXTILE WORLD RECORD

FEBRUARY, 1913

Monthly Comment.

Recommendations for the Revision of Schedule K

Owing to the irrelevant matter in which they are imbedded and the varying forms in which they are presented, the definite recommendations made to the Ways and Means Committee last month for the revision of schedule K can be understood and compared only with considerable difficulty. In order to give our readers as clear an idea of them as possible we have arranged the essential features of these recommendations in the following form:

American Association of Woolen and Worsted Manufacturers and Carded Woolen Manufacturers' Association, tariff committees:
Noils and other wastes, not higher than wool.
Top, slubbing and ring waste, same as tops.
Tops, 15 per cent., plus compensatory.
Yarn, 15 per cent., plus 1/4 cent per yarn number per pound, plus compensatory.
Cloth, 55 per cent., plus compensatory.

Christian Bahnsen, general manager, Gera Mills, Passaic, N. J.:
Wool and by-products, 25 per cent.
Tops, 32 1/2 and 37 1/2 per cent., according to value.
Yarn, 42 1/2 to 90 per cent., according to size.
Cloths and dress goods, 55 to 80 per cent., according to value.

Frank P. Bennett, Boston, Mass.:
Wool, free.
Goods, 50 per cent.

Fred C. Ellenwood, secretary, California Wool Growers' Association:
Wool, 18 cents per scoured pound.

Charles F. Fairbanks, for Bigelow Carpet Co., and George McNeir, for W. & J. Sloane:
Wool, 20 per cent.
Goods, as much protection on carpets as may be given to other classes of wool goods.

Julius Forstmann, Forstmann & Huffman Co., Passaic, N. J.:
Wool and by-products, 20 per cent.
Tops, 32 per cent.
Roving, 38 per cent.
Yarn, 45 to 90 per cent., according to size.
Cloths and dress goods, 55 to 75 per cent., according to value.

W. C. Hunneman, Boston, Mass.:
Wool, adequate protection, ad valorem.
Goods, 45 per cent., plus compensatory.

Rudolf Kleinjung, New Jersey Worsted Spinning Co., Passaic, N. J.:
Grease wool, 20 per cent.
Scoured wool, 25 per cent.
Top, 35 per cent.
Yarn, 47 to 83 per cent., according to size.

Edward Moir, Marcellus, N. Y.:
Wool, ad valorem.
Cloths, 45 per cent., plus compensatory.

National Association of Wool Manufacturers:
Wool, Recommend that duty be specific.
Tops, 7 cents per pound, plus compensatory.
Yarn, Following rates plus compensatory:
24s, 8 cents per pound.
32s, 10 cents per pound.
36s, 11 cents per pound.
40s, 12 cents per pound.
50s, 16 cents per pound.
60s, 24 cents per pound.

Cloths. Following compound rates plus compensatory:

Value per lb.	
Not more than 20c. ..	6c. per lb. and 25%
20 to 25c.	7c. per lb. and 25
25 to 30c.	8c. per lb. and 25
30 to 40c.	11c. per lb. and 25
40 to 50c.	14c. per lb. and 25
50 to 60c.	17c. per lb. and 25

60 to 70c. ..... 20c. per lb. and 25
70 to 80c. ..... 23c. per lb. and 25
80 to 90c. ..... 26c. per lb. and 25
90 to $1.00 ..... 28c. per lb. and 25
$1.00 to $1.25 ..... 30c. per lb. and 30
Over $1.25 ..... 35c. per lb. and 30
Dress Goods: Payne rates are no more than adequate.

National Association of Clothiers:
Wool, 20 per cent.
Cloth, 55 per cent.
Clothing, 75 per cent.

Channing Smith, Cherry Valley, Mass.:
Wool waste, noils, rags and by-products, specific and lower.
Goods, specific equal to 45 per cent., plus compensatory.

Eben S. Stevens, Webster, Mass.:
Wool waste, noils, rags and by-products, free.
Low grade woolens, 40 per cent. ad valorem.

Capital, Wages and Production in Textile Mills

The bulletin on the supply and distribution of cotton, recently issued by the Bureau of the Census, contains an elaborate table of statistics for the different branches of the textile industry from 1849 to 1909. From the Bureau's figures we have compiled the following table, No. 1, showing the number of cotton mills, average capital, number of wage earners, wages and value of products per mill:

TABLE No. 1

	Mills	Capital	Wage Earners per mill	Wages per mill	Value of Products per mill
1849	1094	68,099	84	——	56,553
1859	1091	90,362	111	21,943	106,032
1869	956	147,171	141	40,841	185,658
1879	756	275,503	231	56,931	254,086
1889	905	391,183	241	72,955	296,113
1899	1055	442,881	287	82,168	321,516
1909	1324	621,025	286	100,346	474,616

The total capitalization, wages and value of products all show increases for each ten-year period, but these increases have occurred as a result of a growth in the average business done by each mill and in spite of a decrease in the number of mills from 1,094 in 1849 to 1,055 in 1899. The increase in the number of mills from 1,055 to 1,324 has been accompanied by a marked increase in the average value of the products.

The next table, No. 2, shows the number of salaried employes and wage-earners in the cotton industry, and the average yearly amount paid to each class.

TABLE No. 2

	Salaried Employes	Salary per employe	Wage Earners	Wages per wage earners
1849	——	——	92,286	——
1859	——	——	122,028	196
1869	——	——	135,369	288
1879	——	——	174,659	247
1889	2,709	1,279	218,876	301
1899	4,902	1,499	302,861	286
1909	8,514	1,692	378,880	356

An interesting feature of this table is the comparative increases of salaries and wages from 1889 to 1909. During this period salaries advanced 32 per cent., from $1,279 to $1,692, while wages increased only 18 per cent., from $301 to $356. In the last decade, however, from 1899 to 1909, average yearly salaries advanced only 12.8 per cent., from $1,499 to $1,692, while wages increased 24.5 per cent., from $286 to $356.

The third table compares the average yearly wages with the average amount added to the goods by each operative:

TABLE No. 3

	Wage earners	Wages per operative	Value added per operative
1849	92,286	——	292
1859	122,028	196	478
1869	135,369	288	485
1879	174,659	247	514
1889	218,876	301	516
1899	302,861	286	536
1909	378,880	356	679

This table shows that the average yearly wages per operative in the cotton industry increased 81 per cent. from 1859 to 1909, while the average amount added to the value of the material for each operative increased only 42 per cent. during the same period.

Corresponding tables for wool manufacturing tell a similar story. The following table, No. 4, gives for wool manufacturing what Table No. 1 gave for cotton:

TABLE No. 4

	Mills	Capital	Wage Earners per mill	Wages per mill	Products
1849	1675	19,087	——	——	29,020
1859	1476	26,297	——	7,926	49,765
1869	3208	37,858	——	11,199	62,112
1879	2330	61,593	——	17,462	102,182
1889	1693	145,236	91	32,096	100,725
1899	1414	219,363	112	40,971	210,035
1909	1124	450,360	179	78,257	451,215

As in the cotton industry, wool manufacturing shows a steady increase in the aggregate amount of business done, in spite of a

decrease in the number of establishments. The increase in the number of woolen mills from 1859 to 1869, due to the boom caused by the civil war, has been lost, and in 1909 the number of wool manufacturing establishments had been reduced to 1,124 with an average product of $451,215, as compared with 1,675 establishments in 1849 with an average product of $29,020. In other words, the product of the average woolen and worsted establishment in 1909 was valued at 15 1/2 times that of the average plant in 1849.

Table No. 5 compares the total number of salaried employes and wage-earners in the wool manufacturing industry, and the average amount paid in salaries and wages:

TABLE No. 5

Wool Goods

	Salaried employes	Salary per employ	Wage Earners	Wages per wage earners
1849	—	—	45,438	—
1859	—	—	50,419	232
1869	—	—	105,071	341
1879	—	—	132,672	306
1889	3,652	1,111	154,271	352
1899	4,495	1,436	159,108	364
1909	6,987	1,761	202,029	435

According to this statement salaries in wool manufacturing establishments advanced 58 per cent. from 1889 to 1909, while the average amount paid in wages during the period increased 23 per cent.

The last table, No. 6, shows the average wages and the average amount added to the value of the material per operative:

TABLE No. 6

	Wage earners	Wages per operative	Value added per operative
1849	45,438	—	435
1859	50,419	232	594
1869	105,071	341	713
1879	132,672	306	670
1889	154,271	352	669
1899	159,108	364	727
1909	202,029	435	914

This table shows the average amount paid in wages as having increased 88 per cent. from 1859 to 1909, while the average amount added to the value of the material for each operative increased 54 per cent. during the same period.

Moisture in Egyptian Cotton

The principal topic discovered at the cotton congress of cotton spinners and cotton growers, held some months ago in Egypt, was the excessive amount of moisture in Egyptian cotton. The visiting spinners from Europe soon after their arrival inspected the baling of cotton at Alexandria and had their ire aroused by the sight of a portable spraying apparatus with which a liberal dose of water was administered to the cotton as it was baled. The meeting next day was attended by many representatives of the Alexandria cotton trade, and the spinners improved the opportunity to attack the practice of watering the cotton. T. Cichorius, an Austrian spinner, said:

> Experiments which have been made in Austria showed that the quantity of damp in Egyptian cotton varied from 5 to 6 per cent., some bales containing this amount of moisture more than others. The variation is far too much. As spinners in Austria often had to buy cotton for a whole season they were badly hit by the damp, because the staple, owing to its moist state, became mildewed and lost its strength, and could not at the end of the season be used for the purposes for which it was bought. The obvious effect of this handicap was to increase the cost of Egyptian yarns and to bring about where possible the substitution of American for Egyptian cotton.

L. Steinegger, of Germany, supported the Austrian attack, saying:

> I am a member of a German committee which has been appointed to inquire into the cause of the excessive damp in cotton, and into what steps could be taken to secure compensation for the adulteration that takes place. We should like the Alexandria merchants to explain what is, in their opinion, a correct percentage of moisture.

B. W. Ter Kinle, the representative from Holland, joined in the denunciation of Egyptian methods:

> I have been making tests, and from them have found that the percentage of moisture in cotton varied as follows: Indian 7 1/2 per cent., Texas 8 1/4, Upland 9 1/2, Egyptian from 8 per cent. to more than 10 per cent., Chinese 12 1/2 per cent. One firm of Egyptian cotton merchants is next door to the "Chinee" in excessive damp. The best way to deal with the matter is for every spinner to find out for himself who is the exporter who deals in the fairest way and to give the business to him.

Egypt was not without a defender. Aboza Bey, director of the Khedicial Agricultural Society, quoted authorities to prove that cotton which did not contain moisture could

not be properly baled, and then went on to say:

I deprecate as much as anybody the excessive addition of moisture, and suggest that each bale be stamped with the name of the pressing-house through which it passed. In this way the establishments which added excessive moisture could be detected and the abuse corrected.

Mr. Lindermann, one of the largest cotton merchants in Alexandria, also joined in the defense:

Spinners have taught merchants to add water by the way they judged cotton. Merchants know by experience that cotton which is moist has a better chance of being sold than cotton which is dry. I know of cases in which bales of cotton which were damp commanded, on account of their appearance, a higher price than exactly the same quality of cotton which was dry. Spinners can protect themselves by refusing to buy cotton from firms whose cotton is excessively damp.

It was finally decided that the question of excessive damp in Egyptian cotton should be referred to a joint committee, the International Federation and the Egyptian cotton trade.

Is Artificial Silk a Fraudulent Product?

The curious question as to whether artificial silk is a fraudulent product recently came up for discussion in the French Chamber of Deputies. The proposition to class this material with oleomargarine and deprive it of the name "silk" was advocated by several deputies from the silk raising districts of France, and received the approval of the Minister of Agriculture. The minister had been asked if he intended to take steps to prevent the sale of the artificial product under the name of "silk." M. Deveze supported the question and said:

I intend to propose an amendment designed to put an end to this abuse. It is in fact a fraud because the name "silk" is applied to a material that is not silk, but a vegetable product. Silk wound from cocoons is the only product entitled to the name, "silk." This is a serious question in the silk-growing sections, where the industry is declining, the district of Cevennes affording an excellent illustration of the evil.

To this the Minister of Agriculture replied as follows:

I am able to assure M. Deveze that we consider the law of 1905 broad enough to meet the evil of which he complains. Up to the present time we have confined our prosecutions to cases involving food products, fertilizers and products considered purely agricultural. Silk may be considered as belonging among the last-named. We are now considering how best to eradicate the fraud and are determined to put an end to it.

The deputies' views on this question were evidently influenced by the section from which they hailed, M. Beauquier, who had found an artificial silk mill in his district, taking a position in support of the custom of calling the artificial product "silk":

Representing a district in which a large mill making artificial silk is located, I ask permission to state that there is no difference between the natural and artificial product. The silk worm eats the mulberry leaf and prepares in its stomach the substances from which it spins the natural silk. The artificial silk is manufactured from vegetable materials and converted by chemical processes into a substance similar to that produced by the silk worm. It is, therefore, not a fraud. There is a striking similarity between the silk from the worm and artificial silk.

Deputy Deveze insisted on his view of the question, saying:

Almost any confusion is possible if we can confuse the product obtained from the silk cocoon with that manufactured chemically. According to M. Beauquier's reasoning we could demonstrate that there is never any fraud in the manufacture of wine, since wine made by chemical means is similar to that obtained from the grape. All kinds of frauds are possible if his view is adopted. It will be difficult to accept his contention, but there is involved a question of simple justice to a very important section of the country, the district of Cevennes. At the present time it is a common practice to deplore the abandonment of our common districts. The only means of keeping the people in Cevennes is to maintain silk raising in that section. No other agricultural product is suitable for the climate of Cevennes. The sun is not hot enough and the work with agricultural machinery is very difficult. The mulberry tree only can be raised. If silk raising disappears, our mountain districts will be depopulated completely and a good part of France will be deprived of inhabitants. I ask if these conditions are not serious enough to warrant the Government taking in its hands the defense of our silk raisers by putting a stop to the misuse of the word "silk," which belongs only to bombyx. (Applause.)

M. Beauquier replied as follows:

I wish to add that in the silk weaving industry a notable difference is found between artificial and natural silk. The same fabrics are not made with artificial silk and with natural silk. Artificial silk produces a fabric much thicker and less flexible than does natural silk. The artificial product is used for passementerie and upholstery fabrics, while the natural silk is used for other purposes. It cannot be claimed, therefore, that there is a competition between the two materials because their uses are different.

To this Deputy Deveze retorted:

The name given to both is the same. If the artificial product is called "silk," it is for the purpose of deceiving the public. Let them designate it in some other way.

Finally the Minister of Agriculture gave the views of the government:

Up to the present time the law of 1905 has not been applied to products that are considered purely commercial, among which artificial silk is classed. We are conferring with the Minister of Commerce to determine under what conditions we can bring these artificial products under the law of 1905. I venture to say, however, that we consider there is the same difference between artificial silk and the natural silk that there is between oleomargarine and butter. (Applause.) We believe that we should interfere and put an end to the frauds which are so damaging to sericulture by applying the law to the case in question.

—÷—

The Murdock "Pure Textile" Bill

The serious injury to textile fabrics in the process laundering has long been a cause of well-found complaint, and a few years ago a Pennsylvania congressman won general applause from the multitude by introducing a bill in Congress to prevent public laundries from using processes injurious to textile fabrics. While the bill did not become a law it was unquestionably prompted by an evil that should be remedied. Evidently the agitation had its effect on the laundrymen of the country, for we find the Laundrymen's National Association, La Salle, Ill., issuing a circular letter that certain laundries are distributing to the public by enclosing copies in the bundles of clean clothes returned to their customers. This letter suggests that the customer call on his or her congressman to support the Murdock bill, the following extracts indicating its object:

It seems to be the theory that if these products look all right and will sell, there is nothing else to be considered. The question of how they will wear, and whether they can be laundered or dry cleaned is not considered.

After this bill becomes a law, all goods, articles or fabrics stamped "Pure Wool" will be pure wool, and will never have been used in the manufacture of any other article. Furthermore, it will be sheep's wool.

When a fabric is composed in part of pure wool and in part of mungo, shoddy or extract, it will be marked in plain letters "Mixed Goods" and the label will show the proportion of each contained therein.

The same will be true of silk, linen, and cotton goods—the label on each will tell the purchaser exactly what is being bought.

It is one of the best bills for the people ever introduced in Congress and should be passed.

If it is passed it will only be because the people have brought stronger pressure to bear on their Congressman than the manufacturers.

If you are interested in securing an honest, able law as applied to fabrics, won't you write your Congressman today?

Doubtless such a campaign can be made very effective in creating public opinion in favor of the Murdock bill, but even in the almost inconceivable contingency of its becoming a law, it would in some of its most important provisions remain a dead letter. It is not material whether the Laundrymen's National Association has considered that fact or not. One thing, however, is certain: If the Laundrymen's National Association can cause enough excitement over the real or supposed adulteration of textiles, the practice of destroying textile fabrics by chemical processes during laundering will go on without attracting serious attention.

—÷—

The Export Duty on Manila Hemp

Last month we published an article by Harold M. Pitt, of the Manila Merchants' Association, on the effect of the law remitting the export duty on manila hemp shipped to the United States. Mr. Pitt, who is familiar with trade conditions in the Philippines, stated that the benefit from the rebate of this export duty accrued almost entirely to the exporter, and that only occasionally and then only to a slight extent did the producer share in the rebate. At the time we asked Mr. Pitt to send us a statement on this question we also asked a correspondent in Mindanao, who is extensively engaged in the hemp trade to give us his opinion regarding the matter. His reply, which is found below, shows him to be in agreement with Mr. Pitt and Judge Blunt, that the repayment of the export duty on Manila hemp shipped to the United States has thus far operated as a gift to the Philippine exporter. We withhold the name of this correspondent because of the possibility that if given it might prove embarrassing to him in his business relations:

Mindanao, Dec. 7, 1912.

Editor Textile World Record:

We beg to acknowledge receipt of your favor of October 18th regarding the question of remission of the export duty on hemp shipped from this Archipelago to the United States. It is absolutely right, the grower here of the hemp is never paid a cent of any drawback money the exporter may receive for his shipment of hemp to America. The same market price is paid for all hemp regardless of the country same is shipped to. In the first place, the grower of the hemp very seldom sells his product to the exporter direct; the middleman does this, who in his turn does not

know to which country his hemp is shipped to and never benefits by the remission of the export duty for shipments that go to America. The benefit goes entirely to the exporter.

Hoping this few lines will be of some benefit to you, we are,

Yours very truly,

Mindanao.

A Message to Cotton Spinners

There will be found in this issue a letter from George D. Wadley, of the Southern Cotton Corporation, taking exception to our comments on the proposed work of his company. Most that Mr. Wadley says in this letter has been answered in our previous editorials. A few statements on his latest communication deserve brief comment.

Mr. Wadley denies with some heat our statement that his cotton scheme resembles the coffee valorization plan, and then admits our proposition by saying that "both have for their object the raising of the price of a world's necessity."

He denies that his corporation has had any desire "to cover up its plans or intentions," but its communications made to the Lancashire trade before our first comment appeared were anonymous and one of them contained this:

> The authors of this announcement and the former one do not propose to disclose their names. It would serve no useful purpose and might possibly interfere with negotiations that are pending.

Mr. Wadley asks: "Who will agree with you that the selling price of any commodity should stand still if the cost of production goes up?" We are confident Mr. Wadley will when he has taken the time to study the question. The selling price of a commodity depends on the demand for it and on the supply. The consumer will pay the increase in cost if his wants and ability to pay the price are equal to it. If they are not, he will go without the goods, and the price will not advance, despite the increase in the cost.

Mr. Wadley also asks: "Where is the interference with the law of supply and demand?" There can be no interference with the law. What we have been trying to point out is that Mr. Wadley proposes to interfere with the supply.

The figures we quoted as to the cost of producing cotton were taken from Mr. Anderson's letter and one of the documents sent us by Mr. Wadley himself. Both were in agreement. Neither Mr. Anderson nor Mr. Wadley, nor anyone else can state the cost per pound for producing American cotton. It varies from State to State, county to county, township to township, acre to acre and year to year. When it is produced in connection with other farm products, as in the case of Mr. Wadley's 7-horse farm, the statement of the cost for that farm for any one season is a mathematical impossibility.

Mr. Wadley asserts that "maintaining a fixed price does not necessarily involve a monopoly of a product." It remains for Mr. Wadley to demonstrate that he can maintain cotton at 15 cents a pound without a monopoly. In the meantime the best evidence of his plans is the following admissions, the first in his letter to us, the second in his farewell message to Lancashire spinners, which appeared over his name in the Manchester Guardian of Dec. 13:

> 1. They (the Southern Cottton Corporation) propose to measure out the cotton which they raise to those who use it, when they want it, and at a price which should be satisfactory to all, as it will be placed on a basis only of profit to those who grow it.
>
> 2. We want not only as high a price as we can get, but also we want all the profits that at present are made between the plantation and the mill.

THE SILK ASSOCIATION OF AMERICA

The forty-first annual banquet of the Silk Association of America was held at the Hotel Astor, New York, on February 11, 1913, a large number of members and their guests being in attendance. The speaking began with an address of welcome by Hon. Joseph W. Congdon, of the New Jersey Court of Errors and Appeals. He was followed by Hon. Chang Yin Tang, Envoy Extraordinary and Minister Plenipotentiary of China, "Greetings from the New Republic;" Hon. Charles Nagel, Secretary, Department of Commerce and Labor, "Business and Government;" Hon. Charles Curtis, United States Senator from Kansas, "The State of the Nation;" Reverend W. Warren Giles, Minister, First Reformed Church, East Orange, N. J., "The New Type of Good Man."

The Hearings on the Textile Tariff

A noteworthy feature of the recent tariff hearings before the Ways and Means Committee is the contrast with the hearings four years ago before the same committee of the 61st Congress. The majority then was Republican; now it is Democratic. Then the members, both Democratic and Republicans, showed plainly their ignorance of the technical details of the textile schedules; now they exhibit a marked familiarity with this most important side of the question. There is now far less loose talk, less political discussion and fewer aimless questions than in 1909. The members go directly to the point at issue, and witnesses have lost the opportunity to confuse the subject with aimless talk.

The first of the hearings on Jan. 13, this year, was devoted to the silk schedule. The first witness was A. S. Waizfelder, representing the Braid Manufacturing Association, 251 Fourth Ave., New York. His position was stated as follows:

These goods, silk braids and artificial silk braids, are luxuries; they have been largely imported and are suitable revenue-producing articles.

We therefore recommend that the existing rates of duty be maintained on these for that reason, as well as for the reason that these goods are luxuries, and for the further reason that the report of importations shows that the existing rates are neither prohibitive nor excessive.

I. S. Wolf, of I. S. Wolf & Co., 99 Green St., New York, was the next witness, his request being for a lower duty on tie silks. Mr. Wolf was followed by Horace B. Cheney, South Manchester, Conn., who represented the Silk Association of America. Mr. Cheney began his statement as follows:

The association represents approximately two-thirds of the entire silk industry. There are some 900 mills in this country, and the silk association, while it does not represent the corresponding number of mills, represents approximately two-thirds of the production of the country. I believe they represent somewhere in the neighborhood of 200 mills.

We have filed a brief which comprises the argument which we wish to present to your committee. It is chiefly a brief in favor of the imposition of specific duties upon silk goods of all kinds, and it is based largely upon the theory, or the fact, that silk goods are not a matter of determined value; they are not a thing in which the value is proportionate in any way to the cost of production, but is solely a question of whim. The same article, under an ad valorem duty, might pay three different duties the same identical day. For instance, if you were to have goods which are made in Japan and dyed and printed in Japan, they would pay one duty; if the same goods were exported to France and there dyed and printed, they would pay another duty. . . . Thirdly, if that same article should be produced in France, or some other European country, it would be of another value and would take a third duty.

You have the condition that at the same time in the same article there would be different prints or different colors that have different values.

Mr. Cheney had not proceeded far before he was interrupted by Congressman Harrison of New York, and in reply the witness attacked the accuracy of the census figures:

Mr. Harrison—Do you know what the total American production of silks is?

Mr. Cheney—It is a little difficult to ascertain that. I want to warn the committee against drawing any conclusions from the census figures in relation to silks. The census reports that there are $196,000,000 worth of silk produced in the country; it then proceeds to tell you that there are some $20,000,000 of duplications. These duplications have been purely guesswork. Nobody knows what the duplications are. They will report to you one item as labor and another as contract work. Well, contract work is practically all labor. They report among the products of the country all the spun and all the thrown silk, and most of that thrown silk and spun silk is not going into silk goods; a considerable portion of it goes into the manufacture of electric wires, into braids, and into woolen goods, cotton goods, and all kinds of other different things; and all of those would have to go out.

Mr. Harrison—What is your own estimate of the total production in the United States?

Mr. Cheney—It would be a guess, pure and simple. I should say that it might amount to $150,000,000, but that is the purest kind of a guess, and I hardly like to make it.

Mr. Harrison—Assuming that your guess is correct and that the production in the United States is about $150,000,000, do you regard the importation of $27,000,000 worth of silk as being in competition with our market?

Mr. Cheney—The average production of silk goods for a number of years has been about $30,000,000, on which the Government has averaged a revenue of about $15,000,000. The silk business is on the most closely competitive basis of any business that I know anything about in this country.

A little later Mr. Harrison brought up the question of a duty on raw silk:

Mr. Harrison—Suppose the committee should decide to impose a duty upon raw silk, which now comes in free from the foreign countries. What effect would that have upon the silk industry?

Mr. Cheney—Unless there were compensating

duties put upon it the result would be—whatever duty was put upon it—it would result in a certain decrease in the imports of raw material and a corresponding increase in the imports of manufactured goods.

Mr. Harrison—Would it be possible for the silk manufacturers in the United States to hand down the whole of this duty upon their raw material to the consumers of silk goods in the shape of higher prices?

Mr. Cheney—No, sir.

Mr. Harrison—On account of competition from foreign silk manufacturers?

Mr. Cheney—Yes, sir.

Mr. Harrison—That would be a tax probably borne by the manufacturers and not by the public? Is that correct?

Mr. Cheney—It would be either paid by the manufacturer or the workmen. The manufacturer is on such a close competitive basis today that he is not making much more money than you make on railroad stock. If you put them on any lower basis, it is probably going to come out of the workmen.

Congressman Palmer, of Pennsylvania, questioned the witness regarding the framing of the silk schedule in the Payne bill:

Mr. Palmer—You were cognizant of everything that was being done by the silk association with relation to the writing of the Payne tariff law?

Mr. Cheney—Yes, sir.

Mr. Palmer—Did your committee prepare the details of this schedule for the assistance of the committee?

Mr. Cheney—Yes, sir.

Mr. Palmer—In making the classifications?

Mr. Cheney—Yes, sir.

Mr. Palmer—And in writing the rates?

Mr. Cheney—Very largely.

Mr. Palmer then directed attention particularly to the comparative effects of specific duties on high and low priced goods:

Mr. Palmer—The catchall clause was written to impose an ad valorem duty on the higher-priced goods?

Mr. Cheney—Yes.

Mr. Palmer—So that the largest importations are of the higher-priced goods?

Mr. Cheney—Yes.

Mr. Palmer—The comparatively cheap goods, which come in under or which carry a specific duty, are not imported to any considerable extent, are they?

Mr. Cheney—There are some classes of goods that are imported to a considerable extent.

Mr. Palmer—Well, in comparison with those high-priced goods imported under the catchall clause, the importations under specific rates are small?

Mr. Cheney—I think that your statement is, in the main, correct; that the importations from Europe are, in the main, the high-priced goods.

Mr. Palmer—But the importations are in the main high-priced goods?

Mr. Cheney—Yes. That is not true of the importations from Japan and China, which are low-priced goods. . . .

Mr. Palmer—Now, is not that catchall clause a lower ad valorem than the equivalent ad valorem of the specific on the cheapest goods?

Mr. Cheney—I think, probably.

Mr. Palmer—In other words, under this silk schedule now the cheap silk pays the high tax or has the high duty, and the high-priced silk pays the low tax and has the low duty, generally speaking?

Mr. Cheney—Yes, sir.

Chairman Underwood questioned Mr. Cheney regarding the weighting of silk goods:

The Chairman—I wish you would explain to the committee what is meant by "dynamiting" silk?

Mr. Cheney—It is loading it with tin salts.

The Chairman—Does your company dynamite silk?

Mr. Cheney—Yes.

The Chairman—Mr. Cheney, is not that a fraud on the consumer?

Mr. Cheney—No, sir. These silks which have just been spoken of, which are made for the poor people, could not be made within their reach, without that process. There is a point at which that process becomes a fraud upon the public. There is not any doubt about it. When there is enough tin salts put upon silk goods to deteriorate the fibers, and injure the quality of the silk, and it wears out very quickly, it is a fraud.

The Chairman—Well, now, is it not a fact that they put this tin salts into silk and subject it to this wash for the purpose of making it appear heavier, so the consumer thinks he is getting the heavier grade of silk, and that at the same time it brightens the fiber, is that not so?

Mr. Cheney—I cannot say it brightens the fiber. It does add to the weight of the goods.

The Chairman—Well, does not the luster of the silk increase?

Mr. Cheney—I do not know. I could not say that it does. But there is a large industry, which is a very honest and legitimate industry, which is engaged in manufacturing goods which have a certain percentage of tin salts in them. Most of the goods, however, are not tin weighted. I answered your question directly. We do make some goods that are weighted with tin salts, but it is an infinitesimal fraction of our product. Now, some years ago I made some absolutely pure dye taffetas, and put them out in direct competition with the same article made with tin weighting, and we could not sell any of them at all, although they were guaranteed to be pure dye, and the women knew that the others were not.

The Chairman—This dynamited silk that is subjected to this tin bath, does not a great deal of it rot and fall to pieces? I know I had an umbrella, and this is what first brought it to my mind, I had an umbrella covered, and a few weeks afterwards, where I folded it, every fold broke to pieces and rotted out. Now, that is because I bought some of this dynamited silk, is it not?

Mr. Cheney—Yes; you got some of it that was overweighted.

The Chairman—Now, that is an exception to the rule, is it?

Mr. Cheney—It is.

The Chairman—I should think if you have some suggestions that you want to make, you had better make them because you may get a pretty drastic law, if you do not.

Mr. Cheney—Why, I think that probably the best way to regulate it would be to allow goods which do not contain any weighting to come in as pure dye, and goods which do not go beyond 24 ounces weighting to come in as standard dye, and beyond that, brand them in any way you want to.

The Chairman—Will you make those suggestions in writing and submit them to the committee?

Mr. Cheney—I should not like to make that suggestion for practical operation at the present time, for the reason that I have given. That is the nearest that we have gotten to it, but there you run against the factor of whether it is a practicable thing to determine those percentages by analysis. I submitted a lot of samples to an analyst, and he reported that dye of 76 per cent. was 97 per cent.; he reported that dye of 141 per cent. was 160 per cent., and that dye of 160 per cent. was 180 per cent.

Congressman Fordney, of Michigan, became interested in the proportionate cost for the material and manufacturing of silk goods:

Mr. Fordney—In the manufacture of any grade or quality of silk, what proportion of the cost of production is the cost of labor?

Mr. Cheney—You have asked me a question which it is almost impossible to answer, because it varies all the way from 30 to 80 per cent.

Mr. Fordney—The labor is a very large proportion of the cost, is it not?

Mr. Cheney—Yes; it reaches as high as 80 per cent. of the cost.

A. H. Kursheedt appeared before the committee in behalf of the Association of American Embroidery and Lace Manufactures, to ask for an increase in the duty on lace and embroideries. The next witness was Sidney Blumenthal, of New York, who advocated specific duties on pile fabrics. Congressman Palmer examined Mr. Blumenthal closely regarding the effect of specific duties on goods of varying value:

Mr. Palmer—The most of the imports are of the high-priced goods?

Mr. Blumenthal—That is true, for various reasons.

Mr. Palmer—The high-priced goods are less competitive than the cheaper goods, are they not?

Mr. Blumenthal—Yes, sir.

Mr. Palmer—And therefore the lower specific rates which are levied upon the cheaper classes of goods are more nearly prohibitive than the higher rates which are levied upon the higher class of goods?

Mr. Blumenthal—Your inference is correct, but only in part.

Mr. Palmer—Then if we want to have a really competitive rate, properly balanced all through this paragraph, we should lower the duty on the cheaper articles and raise the duty on the higher articles, should we not?

Mr. Blumenthal—I do not think those higher articles that now come in, in many instances, would be kept out, if the purchasers were willing to pay for them at any price.

Mr. Palmer—Then we would get more revenue by increasing the rates on the higher class articles?

Mr. Blumenthal—You cannot exclude the artistic qualifications of France and Germany in particular creations.

Mr. Palmer—They are very high-class goods and very expensive goods?

Mr. Blumenthal—Yes, sir.

Samuel Kridel, of J. Kridel Sons, of New York, followed with a protest against specific duties:

Mr. Kridel—I wish to bring before you certain articles which, through these specific rates, have been prohibited from being brought into the United States, and I wish to state that these rates that are specific range all the way, under this paragraph, from a catchall clause of 45 per cent. to 259 per cent. ad valorem.

Mr. Harrison—That refers to articles which are not imported because of that very fact?

Mr. Kridel—There have been a few imported, but after they had been found to have been assessed at this high rate, the importations stopped and have been stopped for quite a number of years; but in the first year of the tariff when these rates became applicable, without many importers knowing the exact amount of duty applied and before we were up to the intricacies of the specific rate, we discovered exactly what they had to pay, and these are the samples that I bring before you now.

During Mr. Kridel's examination he was questioned regarding the existence of a European syndicate, or trust controlling the manufacture and sale of silk goods, which binds its customers by contract to maintain prices, paying a rebate at the end of the year to those buyers who have lived up to the agreement. The witness had no definite information regarding such a combine. C. A. Streuli, representing the New York importers, next appeared to advocate a revision of the silk schedule on an ad valorem basis.

F. E. Kip, of New York, who was the next witness, presented a brief in behalf of the silk velvet and plush manufacturers of the United States. He was a strong advocate of specific duties:

It is absolutely essential in this particular industry that the duties thereon be specific and not ad valorem, for the principal reason that the duties intended could not otherwise be properly collected, and the revenue to the Government would be materially decreased by any ad valorem rate of duty,

owing to the immense amount of seconds produced and the utter inability to properly judge the values thereof.

Mr. Kip apparently was well posted regarding conditions in the European silk trade and gave the committee some first-hand information regarding the European silk trust:

The gentleman before me raised a question. He stated that there was no trust in Europe on silk velvets and plushes. Now, I want to say that there is a trust in Europe; furthermore, that he knew that there was a trust in Europe. Everybody knows that. He may not have been the recipient of the rebates given by those people, but that he did not know that there was a trust in Europe is quite inconceivable, because everybody knows that. It has been existing for about four or five years.

I wish to read you a letter dated December 17, 1912, from my representative in Lyon:

"Lyon, France, December 17, 1912.

"Mr. F. E. Kip, New York.

"Dear Sir: We have just come back from Paris and wish to give you a report which will thoroughly post you about the situation there.

"The syndicate of velvet manufacturers has done so much pressing on the Paris buyers and has offered them so many advantages, according to what they, the buyers, say, that they, the buyers, have accepted to sign a contract binding them for three years with the syndicate of velvet and plush manufacturers. During this time they cannot buy from anybody outside of the syndicate, excepting one manufacturer, Montelier, who is tolerated for the same amount of business done with him in 1910. . . . If they buy from anybody else, they lose the return rebate, which is fixed this year at 10 per cent."

I want to state that this is not only a combination and trust of all the manufacturers of silk velvets and plushes to France, but it is a combination of over 90 per cent. of the manufacturers of silk velvets and plushes of France, of Germany, and of England. They are all in one body, and heretofore their contracts were for one year, while now they are for three years. I wish to state and affirm positively, and I defy any contradiction, that Scheibler & Co. are one of the members of the German and English trust, and the following large manufacturers are: J. B. Martin & Co., Lyons, France; Roche & Co., Lyons, France; J. L. de Ball & Co., Lobberick, Germany; Medick & Co., Lobberick, Germany; Andrea & Co., Muhlheun, Germany; Von Beckaroth, Crefeld, Germany; Rossie Bros., Suchteln, Germany; King & Duhr, Suchteln, Germany.

The hearing on January 22 was devoted to the cotton schedule, the first witness being John H. Fedden, of New York, who advocated a conservative revision of the rates on cotton gloves:

Before the enactment of the Payne-Aldrich law, men's and boys' gloves similar to those we make paid 50 per cent. duty and were all imported. There was no industry in this country on these men's and boys' gloves.

We realize that the present duty is abnormally high, and did all we could to prevent it from becoming a law. The Government, however, decided against our ideas, and the bill became a law, the immediate reason being that all the gloves for the United States Army were imported from Germany and England. The Government therefore, in our opinion ,entered into a quasi contract to protect this infant industry, and we started our factory in July, 1910.

The next witness was R. M. Miller, Jr., of Charlotte, N. C., who represented the American Cotton Manufacturers' Association:

Up to the present time our committee has studiously avoided suggesting rates for revision for lack of satisfactory data upon which to base recommendations. The information before us is not yet as complete as is desirable in assuming that responsibility. But we realize at this time that something definite and positive is expected from us if we are to meet your committee in the same spirit in which we believe we have been invited to this hearing.

The very radical reduction in the duties that we suggest on practically all fabrics in common use appear rather startling to some of us, but we are willing to try it cheerfully and in good faith. On the finer fabrics, luxuries, we cannot figure a corresponding reduction in all cases, although our proposed rates do seem to be very near the danger line.

As is well known to your committee, the cotton manufacturing industry in the United States has been passing through a period of unprecedented depression during the past two or three years, while the English cotton manufacturing industry apears to be very prosperous. Therefore, comparisons at this time are decidedly unfavorable to the American industry.

Believing that your committee is fully acquainted with this condition of affairs, I beg to submit a schedule which we have prepared, designated as "Exhibits A and B."

EXHIBIT A.—YARNS

Singles, in the gray, 1-9s, 10%; 10-19s, 12 1/2%; 20-39s, 17 1/2%; 40-59s, 25%; 60-99s, 30%; 100 and over, 35%.

Combed, twisted, dyed or colored, or advanced in manufacture beyond singles, in the gray, 1-9s, 15%; 10-19s, 17 1/2%; 20-39s, 22 1/2%; 40-59s, 30%; 60-99s, 35%; 100s and over, 40%.

EXHIBIT A.—COTTON CLOTH CONTAINING YARNS

Class 1: Cotton cloth, including calico, sheeting, and plain weaves, not including cords, stripes, checks, plaids, or figures, made entirely of single yarns, except selvages—

In the gray, 1-9s, 10%; 10-19s, 12 1/2%; 20-39s, 15%; 40-59s, 20%; 60-99s, 30%; 100s and over, 30%.

If advanced in any way beyond the gray condition, by any one or more processes, similar

to and including bleaching, napping, dyeing, printing, mercerizing, coloring, or other processes not specially otherwise provided for, 1-9s, 15%; 10-19s, 17 1/2%; 20-39s, 20%; 40-59s, 25%; 60-99s, 35%; 100s and over, 40%.

Class 2: Cotton cloth of fancy or figured weaves of any description, cords, stripes, checks, plaids, figures, drills, twills and kindred weaves, crepes, terry pile weaves, gauze and leno weaves, and cloth composed wholly or in part of any of the foregoing—

In the gray; cotton cloth composed of two-ply or more yarns, either wholly or in part, except if in selvages only in the gray, 1-9s, 15%; 10-19s, 17 1/2%; 20-39s, 25%; 40-59s, 30%; 60-99s, 35%; 100s and over, 40%.

If advanced in any way beyond the gray condition by any one or more processes similar to and including bleaching, napping, dyeing, printing, mercerizing, coloring, or other processes not specially otherwise provided for, 1-9s, 20%; 10-19s, 22 1/2%; 20-39s, 30%; 40-59s, 35%; 60-99s, 40%; 100s and over, 45%.

Class 3: Cotton cloth of jacquard weave—

In the gray, 1-9s, 25%; 10-19s, 27 1/2%; 20-39s, 30%; 40-59s, 35%; 60-99s, 40%; 100s and over, 45%.

If advanced in any way beyond the gray condition by any one or more processes similar to and including bleaching, napping, dyeing, printing, mercerizing, coloring, or other processes not specially otherwise provided for, 1-9s, 30%; 10-19s, 32 1/2%; 20-39s, 35%; 40-59s, 37 1/2%; 60-99s, 45%; 100s and over, 50%.

Class 4: Cotton cloth composed wholly or in part of bleached, colored, dyed, or mercerized yarns, selvages excepted, shall pay the same rates of duty according to construction as provided for cotton cloth of classes 1, 2 and 3 when advanced beyond gray condition, namely:

Class 1, 1-9s, 15%; 10-19s, 17 1/2%; 20-39s, 20%; 40-59s, 25%; 60-99s, 35%; 100s and over, 40%.

Class 2, 1-9s, 20%; 10-19s, 22 1/2%; 20-39s, 30%; 40-59s, 35%; 60-99s, 40%; 100s and over, 45%.

Class 3, 1-9s, 30%; 10-19s, 32 1/2% 20-39s, 35%; 40-59s, 37 1/2%; 60-99s, 45%; 100s and over, 50%.

Stuart W. Cramer, of Charlotte, N. C., following with a statement in explanation and support of the yarn schedule, Exhibit A:

In explanation of our method of arriving at the basis for these rates, I beg to say that a careful examination of printed House Report No. 65, Sixty-second Congress, submitted by your committee, discloses the fact that, broadly speaking, yarns from No. 40 and upward are fairly competitive at the present rates, as shown by actual importations. Of those yarns, No. 78/2 combed is the most conspicuous example of a competitive rate. The present specific duty of one-fourth cent per number per pound amounts to 19 1/2 cents per pound. In 1910, 637,109 pounds were imported, on which a duty of $124,236 was collected. The average foreign invoice value was 54.6 cents per pound, and the ad valorem rate of duty figured at 35.71 per cent.

To this must be added an additional importation of the same number of yarn mercerized in amount, 270,279 pounds, upon which a further duty of $57,974 was collected, the ad valorem rate of duty amounting to 35.60 per cent.

In short, over 900,000 pounds of that one particular number was imported in 1910, yielding a revenue of over $180,000.

Commencing with a classification embracing single yarns in the gray, from Nos. 1 to 9, inclusive, our committee arbitrarily assumed a rate of 10 per cent. That rate was chosen as the minimum rate that in our opinion should be levied upon any manufacture of cotton, as we felt it to be as low in proportion, if not lower, than practically any other schedule. Also we felt that rate to be reasonable, because the present rate on those yarns is 50 per cent. higher than this rate which we have chosen.

Our committee then drew an average between these two rates of 10 and 35 per cent. ad valorem, respectively, placing the duties at intermediate points in proportion thereto.

Mr. Fordney—Are you a manufacturer of yarn?

Mr. Cramer—I am.

Mr. Fordney—Do you recommend lower rates of duty than the rate now in the existing law?

Mr. Cramer—It is very much lower.

Mr. Fordney—And still you are a manufacturer of yarn?

Mr. Cramer—Yes, sir.

Mr. Fordney—Why do you recommend it?

Mr. Cramer—Simply because we understand we are expected to suggest rates that will be competitive rates, and for that reason we are offering rates that we believe will be competitive.

Mr. Hill—Do you recognize the report of the Tariff Board in which they show the comparative differences between the cost of making yarn in the United States and the cost of making it in England, as found on page 423 of their report, where they give a series of comparative costs between the two countries?

Mr. Cramer—We do not.

Mr. Hill—You do not recognize it?

Mr. Cramer—We do not recognize their English costs; no, sir, we do not.

Lewis W. Parker, of Charlotte, N. C., followed in support of the cotton cloth schedule, Exhibit B:

Now, in presenting today, as the American Cotton Manufacturers' Association does, a schedule to your committee we do so recognizing two things: First, that it is incumbent upon us to show in that schedule that we are making a suggestion of reasonable reduction in the tariff as now existing, because we understand and appreciate that the majority of the committee are, I may say, determined if it can be done in justice to the community to cause a reduction. Consequently we have outlined our schedule and sug-

gestion upon the basis that so far as the duties affect the classes of goods which appeal to the great masses of citizens, and that so far as it affects the classes of goods which the great people use, we must expect to make reductions in a very considerable amount, and that perhaps there is not the same necessity to consider reductions in the classes of goods which are worn by those of better means.

Therefore, I may surprise even the worthy chairman of this committee when I tell him that the schedule we submit as to the great mass of products worn by the great mass of people is below even the schedule suggested in his own bill. We have divided, and suggest to your committee a careful consideration of that division of rates, somewhat different from that made by your own committee. I have a few copies of it here, if you desire to follow it as I go along.

We suggest a division based upon the character of the cloth, and in basing it on the character of the cloth it very naturally, as I said a moment ago, will be found that the great reductions suggested by us apply to the cheaper and the more common articles. For instance, we suggest a class one, to include all cotton cloths, including calicoes, sheetings, or plain weaves, but not including coarse stripes, checks, plaids, or figures made entirely of heavy yarns, except selvages in the grey. Now, we start with goods containing yarns 1 to 9, 10 per cent., where the Underwood bill is 15 per cent.; goods containing yarns from 10 to 19, 12 1/2 per cent., where the Underwood bill is 15 per cent.; goods containing yarns from 20 to 39, 15 per cent., just in accord with the Underwood bill. Now, above that, 40 to 60, 20 per cent.; 60 to 90, 30 per cent.; 100 and over, 30 per cent.

The Underwood bill is above us on numbers below 40. It is under us on numbers above 40.

Now, why do we make that distinction? In the class of goods in which we recommend a reduction as against the Underwood Bill are classes like ducks, osnaburgs, sheetings and print cloths, because these are the classes which experience has told us we have to advance sufficiently in manufacturing to be today on a somewhat reasonably competitive basis with foreign manufacturers. However, I do not want to inject in any sense partisan views, but I may say personally that there are in our committee some who adhere to the views of the party in power, and we have believed that a tariff for revenue might reasonably be considered as imposing a minimum of a 10 per cent. bill; and therefore we have started with a tariff of 10 per cent. as a minimum and build up from that 10 per cent.

Mr. Parker—We take this position: We recognize that we must have a condition of competitive production, and therefore we have endeavored to make a schedule which in our judgment—and I will say in support of my judgment—is as nearly a competitive relation as we can suggest to you.

Mr. Longworth—Is this true or not, that a general schedule which would be fairly protective of the cotton industry in Massachusetts would be exceedingly protective of the industry in the South?

Mr. Parker—It would to an extent, Mr. Longworth, so far as my suggestions go, I admit very frankly that the idea of protection does not enter into it. Personally, I have never been a protectionist, and do not pretend to be one now. I have endeavored to form the suggestions with regard to a tariff for revenue, making such a schedule as would permit reasonable importations without injury to the manufacturer, and yet sufficiently low to prevent extreme prices to the consumer.

Now, I say to you gentlemen that for the years 1906 and 1907—and I say it as a manufacturer, and it is the basis today of every position I have taken on the tariff as a manufacturer—the greatest curse that has ever befallen us as manufacturers were the extreme prices which came to us in the years 1906 and 1907. It has taken this industry five years to recover from that: that is, the prices of 1906 and 1907. The industry has not recovered as yet. You cannot get the nerve into the buyers today, and they won't get the nerve until they feel that conditions will not happen where there will be a collapse in prices.

Mr. Fordney—What proportion of the cost of your finished goods is labor?

Mr. Parker—It depends entirely upon the class of fabric that is made at different mills. I control 16 mills. In those mills I have various classes of fabric ranging from the cheapest osnaburgs, referred to here, to what is reasonably fine—not as fine as the finest.

Mr. Fordney—But I mean what proportions of labor is employed?

Mr. Parker—The proportion of the labor would range from about, I would say, 8 to 10 per cent. in the osnaburgs and to probably 25 per cent. in the finer goods.

Mr. Hill—You will accept the statement of the Tariff Board that they are very, very, very much lower in the Southern States than in the Northern States, will you not?

Mr. Parker—I do not think the Tariff Board makes that statement.

Mr. Hill—Well, I will read it to you.

Mr. Parker—I do not think it says "very, very, very much."

Mr. Hill—Table 210, in which the hourly earnings in different occupations in the cotton industry are given as follows: Females: Great Britain, 100; Southern States, 142.5; Northern States, 178.6.

I shall not take up the time of the committee to go through the whole list, but I would call your attention to table 210 in the report of the tariff board, by which, I think, you will see that the wages in the United States are nearly double the wages of Great Britain, and are in the Northern States on an average 50 per cent. higher than they are in the Southern States.

Mr. Parker—I do not so read the table.

Mr. Hill—I commend the table to you for consideration.

Mr. Parker—I am glad to say that I have studied it very hard before.

The Chairman—You say you have studied this tariff board report as to the wages in the South and North?

Mr. Parker—I have.

The Chairman—And do you disagree with Mr. Hill in what he says?

Mr. Parker—I do not agree with Mr. Hill's statement that the tariff board's statement says that the cost of wages in the South are "very, very,

very much" lower than they are in the North. I agree with Mr. Hill's statement that there is a difference in the wages North and South.

Mr. Longworth—You object to the two "verys"?

Mr. Parker—I should say lower.

The Chairman—You think the difference is about 10 per cent.?

Mr. Parker—I think the difference ranges from 10 to 20; probably in some cases it is as high as 25, but certainly in the average case as high as 10.

Mr. Hill—I think you are very much mistaken, and they are very, very much. I would like to ask you this question. You stated you accepted this tabulation—and by the way, I want to congratulate you on your classification. When the bill I had the honor to prepare was submitted, I was much criticized by a gentleman whom I think has business relations with you, that the classification could not be made on the basis of plain weaving and figured weaving, checkered looms, etc. I notice you have taken that in making up the bill with your recommendation to the committee. Do you think that is a sound proposition?

Mr. Parker—I may have, of course, failed to understand your bill, but I do not find in that bill any distinction between plain weaving and figured weaving.

Mr. Hill—Then I think you have not read the bill. I will read paragraph 5: "Cotton cloth, plain woven, in the grey, or bleached, dyed, colored, stained, painted, printed, mercerized, or otherwise finished, containing not more than five square yards to the pound, etc."

Paragraph 6: "Cotton cloth, fancy woven, in the grey, or bleached, dyed, colored, stained, painted, printed, mercerized, or otherwise finished, containing figures, produced by various weaving devices known as dobby, etc."

Mr. Parker—Please read paragraph 5 again.

Mr. Hill (reading)—"Cotton cloth, plain woven, in the grey, or bleached, dyed, colored, stained, painted, printed, mercerized, or otherwise finished, containing not more than five square yards to the pound, etc."

Paragraph 6—"Cotton cloth, fancy woven, in the grey, or bleached, dyed, colored, stained, printed, etc."

Mr. Parker—May I interrupt you one minute? Under your section, how would this piece of goods I have on, this shirt, come in? Is that a figured shirt?

Mr. Hill—If you will take it off and let me examine it I will tell you. (Laughter.) Now, Mr. Parker, I do not want you to think that in asking you these questions I have any criticism to make of you.

Mr. Parker—I understand.

Mr. Hill—I am heartily in favor of giving you every ounce of protection you need, whether you call it protection or revenue tariff, as well as every cotton manufacturer; but do you not recognize that with an increasingly high duty—one that you do not need on the fabric—is carried right straight through, and must be, into the finished product that the people of this country buy in the way of the shirt which you have on—and which you have suggested—in the way of collars that men wear, and everything of that kind—that you ought to add some difference in the cost of production, with the doubt on your side every time; is not that fair?

Mr. Parker—That is entirely a questionable statement of policy. Personally I do not believe in basing a tariff on the alleged difference in cost. In my own judgment it is an impossible basis. I think the test—the proper test—is at what particular duty will there be a fair competitive relation between the foreign product and the domestic product.

Mr. Hill—Very well; we will take it that way. I want to ask you if you do not figure the cost of goods before you sell them?

Mr. Parker—I always do if I can.

Mr. Hill—Then why is it not just as possible to figure the duty on comparative cost in a mercantile transaction if carried on on the basis of the respective cost?

Mr. Parker—The only question is, What is to determine the questionable cost?

The best way to determine what can be done by two sections of two countries is to show what is done under a particular tariff. If the tariff is 10 per cent., the imports come in—

Mr. Hill—We will take it on that basis, but won't you agree with me that these gentlemen in making up their tariff bill have got to start on some fair basis for the foundation of the fabric in order to reach a conclusion on the higher finished products?

Mr. Parker—That is what we have undertaken to do, and that is why we suggest 10 per cent. as a minimum basis. I do not want to be misunderstood here, and I have asked my friends in the East to bear me out or not in this statement; I am not seeking to make any suggestion which is favorable to the Southern manufacturer as against the Eastern manufacturer. On the contrary, I think my friends from the East who are going to appear here will tell you that the tariff which we have suggested they cut in a degree, which they have never in the same degree cut Southern products, and have allowed a degree of protection—if you want the word—in Eastern products that have never before existed.

Mr. Fordney—You say you are shipping your products to England and are getting a higher price there than you are in this country?

Mr. Parker—I did say that, but you must draw a distinction. Unfortunately, however, the consumer in America does not have to get his goods at the same relation to what it costs the manufacturer, as the consumer abroad gets them in relation to what it costs the manufacturer abroad. In a large proportion of cotton goods today the American manufacturer is getting less for his goods than the manufacturer in England does, but the consumer in America is paying more than the consumer in England is paying.

Mr. Longworth—That is on account of the retail profits that come after the manufacture?

Mr. Parker—It is the profits behind manufacture, on account of a different system of distribution.

Mr. Longworth—With which, of course, the tariff has nothing to do?

Mr. Parker—Yes.

Mr. Fordney—The manufacturers of cotton goods in this country are getting less per yard for their products under our protective system than the manufacturers of England are getting for free-trade goods; is that right?

Mr. Parker—At the present time; yes, sir. I will not hesitate to admit, Mr. Fordney, that so far as I am concerned, I started out some time ago as a young man, after leaving college, in the belief that the consumer paid the manufacturer's price, plus the duty. I have become long since convinced that there is very little relation between the duty and what the manufacturer gets out of the goods. On that I am speaking for myself.

Mr. Fordney—Between the manufacturer and the consumer today somebody, then, is making abnormal profits?

Mr. Parker—No, sir; my experience tells me that the distributor is not making abnormal profits, but the consumer is getting into extravagant habits and expects to get his goods in such a way as to cause abnormal cost in distribution. To illustrate: I can go to London and buy a package, and that package is given to me with a little handle on it, and I am expected to take it back to the hotel. If I buy that package in this country, it is wrapped up, and they ask me where I want it sent to.

Mr. Fordney—If I understand you, the price to the manufacturer in this country is less than it is to the manufacturer in England, yet the consumer in the United States is paying a higher price for the goods than is the consumer in England for his goods?

Mr. Parker—I think so, as a rule; yes, sir.

Mr. Fordney—Where does that difference in price come in as between the manufacturer and the consumer?

Mr. Parker—Let me illustrate that to you by a single incident. One afternoon last summer I went home a little earlier than usual and found my little boy at the telephone ordering a watermelon, which was to be charged to me at 10 cents. I live a little way out of town, and it would cost that merchant more than 10 cents, or more than the cost of the melon, to deliver that watermelon to me. I told my boy that if I caught him doing that again I would have to give him a reminder. I told him that it was not the right thing to expect that merchant to spend 10 cents in delivering that watermelon to me. However, we might as well recognize the fact that the American public does demand service in distribution which has to be paid for by the consumer, and when the American public is willing to reduce its demands in that respect it will get the goods cheaper.

Mr. Fordney—You think our system of distributing the goods has absorbed that difference in the price?

Mr. Parker—Yes, sir.

Mr. Fordney—And that is not the case in England?

Mr. Parker—They do not expect the same service in England.

Mr. Fordney—You cannot add that to the tariff?

Mr. Parker—I do not.

Mr. Fordney—If you must accept lower prices for your product, the difference in the cost of labor and raw materials makes that difference in cost, does it not?

Mr. Parker—Not necessarily.

Mr. Fordney—Where does it come from?

Mr. Parker—It is consistent with a cheaper cost of production to have an increase of wage.

Mr. Fordney—How can you, with the same class of machinery employed today as is employed abroad, lower your cost of production, unless you get cheaper raw materials, which it takes labor to produce, or lower the wages in your own factory?

Mr. Parker—I heard yesterday afternoon a very intelligent discussion of this very question by a very intelligent manufacturer from the State of Georgia, Mr. Fowler E. Calaway. Mr. Callaway stated that in his long experience as a manufacturer, which I think is quite as long as my own, he had advanced the wages of his employes so that he is paying today 40 per cent. more than he paid when he began manufacturing, and yet his cost of manufacture is 40 per cent. lower than it was when he began manufacturing, because he has learned and they have learned. Their efficiency has been greatly increased.

Mr. Longworth—Generally speaking, you say that your labor is more efficient than the corresponding labor in England.

Mr. Parker—I have no doubt about that.

Mr. Longworth—You think your labor is more efficient?

Mr. Parker—I do.

Mr. Longworth—Taking the average workman?

Mr. Parker—I do. I would go further than that, although my good friend from New England will not agree with me, and say that we have an advantage in labor in the South. We have a superior class of workmen in the South, because all of our help are native whites, and are of the same general condition of life as those who employ them, because we all come from the same origin.

Speaking generally, the operators in cotton mills in that country have followed the footsteps of their fathers and ancestors, who were also in it.

Mr. Longworth—In England?

Mr. Parker—In England.

Mr. Fordney—Mr. Parker, I would like to ask you this——

Mr. Parker—Let me make this statement: The reason why we are going to have very great trouble in cotton manufacturing is that the cotton manufacturing industry is a mere steping-stone to higher industries, and that explanation particularly goes for New England, where the help today there is using the cotton industry as a stepping-stone toward higher industrialism. We have the same condition in the South.

Mr. Longworth—In the foreign countries the workers stay in that class of manufacture for generations?

Mr. Parker—Yes, sir; the father and grandfather of this man have been in it, but the man who enters a cotton mill in the South today is merely using it as a means of advancing his condition, not with any expectation of remaining there for generation after generation, but to advance himself into a higher state.

Mr. Longworth—Are they unionized?

Mr. Parker—No, sir; they are not unionized.

Mr. Longworth—None of them?

Mr. Parker—No, sir—well, I say none of them——

Mr. Longworth—They are very highly unionized in England?

Mr. Parker—They are in England. I think that is possibly one of the retarding effects on the amount of production.

Mr. Longworth—By limiting the output?

Mr. Parker—Yes.

The next witness was A. V. Victorins, of New York, a manufacturer of cotton gloves:

Mr. Victorius—If the committee please, we are manufacturing cotton gloves—men's and boys' mostly men's.

Men's and boys' cotton gloves, manufactured abroad, can be purchased abroad at prices varying from 42 cents to 47 cents per dozen, and when imported under the present Payne-Aldrich law, are subject to a duty of 50 cents per dozen, and 40 per cent. ad valorem, amounting to from 16.8 cents per dozen to 19 cents per dozen, making an aggregate of from 66.8 cents per dozen to 68.8 cents per dozen duty.

It was not until this tariff went into effect that the manufacture of these gloves was started in the United States, and under the present law there are now about nine manufacturers engaged in the manufacture of these gloves, the largest employing about 100 people.

All these industries were started in reliance upon the present tariff. We are not opposed to a gradual reduction in the amount of the tariff, but the proposed reduction to a 35 per cent. rate is so radical that, if enacted, it will immediately destroy the industry in this country.

Simply adding a duty of 35 per cent. to the price of 42 to 47 cents abroad would bring the import price, duty paid, to from 56.7 cents up to 63.5 cents per dozen, and it would be utterly impossible, under the American standard, to compete against such prices.

We respectfully submit that if the 50 cents per dozen specific duty be reduced to 40 cents, and each year thereafter 5 cents per year be taken off until it reaches 25 cents per dozen, and if the 40 per cent. ad valorem be reduced to 35 per cent. ad valorem, the manufacturers may then be able to adjust matters so that they may continue in business.

W. N. Ells, who was the next witness, advocated the present duty on shirts.

H. J. Lyall, of the Brighton Mills, Passaic, N. J., made a statement in favor of the present rates on fabrics suitable for pneumatic tires, and was followed by George S. Brown, a shirt manufacturer, of New York, who supplemented Mr. Ells' testimony regarding the rates on shirts.

The next witness was Simeon B. Chase, of Fall River, who made a statement on the cotton yarn and cloth tariff:

I have understood that the word "protection" and the word "specific" are both a little out of order in these days. But I realize that there are different kinds of protection. A good umbrella may keep off all the rain, and when it is made of cheesecloth it may let a part of it drip through, but both mean something in the way of protection.

There has been an impression abroad that the cotton schedule has been greatly increased of late, under the Payne-Aldrich bill, especially for the benefit of the manufacturers. Such is not the case. Of course, the committee knows that ninety one hundredths of all the goods that are made and consumed in this country come under the schedules of the Wilson bill, as originally made in that bill. I think I am safe in making that statement, that nine-tenths of all the goods made and consumed in this country will come under the Wilson bill.

I was in Washington when the Wilson bill was framed and I know that it made a reduction in cloths made from coarse yarns of from 33 1/3 to 50 per cent., on medium goods from 22 to 33 1/3 per cent., and on cloths made from fine yarns from 11 to 22 1/2 per cent. So that the cotton schedule, as it relates to at least nine-tenths of the production and consumption of this country has been subject to a large reduction from the old-time McKinley tariff.

I have to take exception to the testimony of my friend Mr. Parker in regard to the cost of goods in Massachusetts, at least, and abroad. I cannot say about South Carolina, because I do not know. I know that it costs us a good deal more to make the kind of goods that I am engaged in manufacturing, which is the so-called high grade of goods, that it does abroad. I have to take exception to the statement that it costs less to make goods with high-priced labor than it does with low-priced labor. I have found that if I pay 3 cents a pound for spinning yarn, that it costs 3 cents a pound. I do not know how to make it figure out 2 1/2 cents if we pay the operators 3 cents, and, as every manufacturer knows, nine-tenths of the work done in the cotton mill, or somewhere in that vicinity, is done by piecework. If we pay high prices, it means high cost, and the cost has greatly increased of late years. There is no question about that. Public sentiment and legislation have in the North, and especially in Massachusetts, eliminated largely child labor. The age limit has been raised once or twice, and of course that means more expensive labor. The hours of labor since the old bill was passed have been reduced from 60 hours per week down to 54, and the production has been curtailed 10 per cent., while the wages of operatives per capita are higher notwithstanding the shortness of the hours and the reduction of product, so that we are not meeting the issue of a lower tariff by a lower cost of production; it is impossible for us to do so.

As almost everyone knows, there always has been an increasing expense coming upon us—in fact, it has come upon us—in the compensation laws which have been passed, remunerating workmen in case of accident. That is compulsory now

by law and the cost of that is a very considerable item. While I do not appear as a stand-patter or taking the ground that we do not want any reduction whatever in the tariff, I ask this committee to be very careful and very moderate in their action, and we would like to be experimented with a little gradually, rather than to have, as the expression is, the dog's tail cut off behind the ears with one fell stroke.

The Chairman—You do not combat what Mr. Parker said about the lower grade yarns and cloth made out of the lower grade yarns, do you?

Mr. Chase—I do to a certain extent; yes, sir.

The Chairman—The committee will be glad to hear you on that.

Mr. Chase—When it comes to the extreme low grades, about which I know nothing, I do not combat that; but on what I call medium yarns, I think there is no question that if he claims they are made cheaper here than they are in England, he is wrong.

The Chairman—He did not make that claim. He did state, I think, that they could make some low-grade yarns as cheap. But in the medium-grade yarns I did not understand him to say that.

Mr. Chase—Possibly I misunderstood him. I could not hear very well, anyway.

The Chairman—He said the rate on these medium-grade yarns and the cloth made out of them would be equalized. For instance, you call a medium-grade yarn from 40 to 60, do you not?

Mr. Chase—No.

The Chairman—What do you call medium?

Mr. Chase—I should call medium grades from 30 to 40. When you get up to 60, I call it fine.

The Chairman—From 30s to 40s?

Mr. Chase—Yes, sir.

The Chairman—On the plain yarns, the white and gray yarns, from 20s to 39s, we put on a duty of 15 per cent. Do you think that is a reasonable tariff?

Mr. Chase—I do not think it is enough.

The Chairman—The Tariff Board seems to indicate that he was right with reference to that.

Mr. Chase—Possibly the Tariff Board did. I am simply expressing my individual opinion.

The Chairman—In other words, you mean to say that you could not do it in your own mill? Is that it?

Mr. Chase—That is right. I want to say a word about ad valorem duties and to see if you have considered a certain fact in relation thereto. I just want to make a suggestion. I am not going to argue the question. I have bought Sea Island cotton in my day as low as 12 cents a pound, and I have paid over 40 cents. I have made that into goods with a labor cost of 50 cents, and the costs which are affected by this same principle, on materials, taxation, etc., of which we have an excessive amount over on this side, would run it up to 75 cents. The cotton, with the waste out, at 12 cents would be about 17 cents. Adding that to 75 cents would make it 92 cents a pound. If you give us a duty of 30 per cent. ad valorem, which is 27 cents a pound in round numbers, on 90-cent goods and the labor and other factors which are affected by the tariff is 75 per cent. Now, we will take the 40-cent cotton. That, with the waste out, costs us nearly 60 cents. You add your labor and other materials to 75 cents and you have got $1.35 and that 30 per cent. ad valorem. Don't you see the difference?

The Chairman—I see what you mean, of course. When the cotton is high and the imports come in, you figure that you get an actual higher rate of tax on the raw material?

Mr. Chase—You are bound to; you cannot help it.

The Chairman—But there is this proposition: If we were figuring this merely from the standpoint of the manufacturer, and if the Government was not involved at all, there might be a great deal in your argument, and we might be willing to concede it; but when we are levying this tax primarily for revenue, from our standpoint, because we are acting for the benefit of the Government, the protection that grows out of it is merely an incident that comes to you. From our standpoint it is a different proposition than if we were levying a protective tariff, where we were levying it primarily for you and the revenue to the Government was an incident.

Mr. Chase—I understand that.

The Chairman—Looking at it from the standpoint of the Government, we are very much less liable to reach a block by reason of changing conditions if we have an ad valorem rate to adjust itself to those conditions than we are if we have a specific rate that does not adjust itself. In other words, if we were to put on a specific rate that was reasonably fair in a normal market a drop of prices would probably—and often does under the present bill—make that specific rate a prohibitive rate, and the Government gets no revenue under those circumstances.

Of course, from the manufacturer's standpoint, you may say he needs protection more, but from our standpoint we can say that the Government will probably need revenue more because of this drop all along the line. Therefore, looking at it from the standpoint of the Government, it seems to us that the ad valorem rate is a rate that is more apt at all times to bring in revenue to the Government. Of course, if there is a fall in the market it will bring less revenue, but it supplies some revenue instead of making a block and supplying nothing.

Mr. Chase—I quite agree with you from a purely revenue point of view. Of course, if you want rates low enough so that no goods can be made here, then, of course, you would get all the revenue from cotton cloth, because the people wear it and it would all come in from the other side. If it is intended to grant the manufacturer incidental protection—but we haven't time to thrash this out.

I believe the specific rate is the rate, because the labor and other factors—I will not say that labor is exactly a factor, but it is more a factor than the raw material. You know very well that the raw material in the country where you come from—you must know it—goes way up and away down, and that is where the ad valorem rate works very badly.

The Chairman—If I were looking at it from your standpoint, I think I might reach your con-

clusion, but I am looking at it from a different standpoint; we are looking at it from two different angles. We think it is more important to levy this tax to secure some revenue, that that is the primary purpose.

Mr. Chase—We are in your hands.

Henry N. Berry, who represented the Richmond Lace Works, Alton, R. I., asked for the retention of the present duty on lace.

F. B. Shipley, of F. B. Shipley & Co., New York, who was the next witness, took issue with Mr. Parker regarding the tariff on jacquard goods:

I heard Mr. Parker say—and, mind you, it appears that from the other standpoint Mr. Parker is regarded by his colleagues as a very radical downward revisionist—that he wanted 5 per cent. additional duty upon jacquards, because jacquards were a luxury. This was so at variance with my common knowledge that during the recess for the lunch hour I went to a department store in Washington and there bought four samples of jacquards probably within four minutes.

The first one, according to my best judgment, seems to have been made in England, and the retail price at the store at which I bought it was 25 cents. It is mercerized as well as jacquard. Twenty-five cents a yard at retail, in view of the figures of retail profits which have been quoted to us, is not a high price.

Mr. Harrison—Into what kind of articles does that material go?

Mr. Shipley—This particular cloth seems to be a bleach-bleached, mercerized fabric, with a jacquard figure, and containing an extra thread. It embodies a great many of the complex classifications of the present law.

Mr. Harrison—For what purpose is it used?

Mr. Shipley—It is used for waists and dresses; as an ordinary dress material. It is neither the cheapest nor the dearest, but a fair average of the character of fabric that an average woman in moderate circumstances would buy. Remember that Mr. Parker, who I admit is at least as great an authority and as competent a man as exists in the trade, classifies all jacquards as luxuries. I purchased the finest and highest priced jacquard waists of that nature that I could find, in the brief period I was in the store, at 25 cents a yard retail. Within my common knowledge I do not mind admitting that the price—this seems to be an English cloth—the price in England does not vary far from 11 to 11 1/2 cents.

Mr. Palmer—Then it is more of a luxury here than it is over there?

Mr. Shipley—Yes. I regret, Mr. Chairman, that it is not possible to go through the 6,000 or 8,000 examples of specific cases that would be necessary to show the side of the consumer in this matter.

The next sample I bought is also a jacquard, mercerized waisting in common use. This [indicating] is the sample. I purchased this at 19 cents, the same character of goods. That is made in America.

Mr. Harrison—For what purpose is that used?

Mr. Shipley—For the same purpose, Mr. Chairman, that dress and waist material is commonly used.

Finally, Mr. Chairman, I purchased another jacquard waisting in the same store for 15 cents a yard. It is not merely jacquard, but it is mercerized, and I think—while I have no means of exactly knowing what this particular sample cost—I think it is not an overstatement to say that it cost not more than 9 1/2 cents a yard, with terms which would bring the cost to that store down to about 9 cents.

Albert F. Bemis, of the Bemis Bros. Bag Co., Boston, Mass., was the next witness, making a protest against putting cotton bags on the free list:

I recommend no changes in classification or descriptive phraseology in Schedule I, or other schedules of the tariff, which would result in putting bags or sacks made in whole or in chief part of cotton on the free list, and especially that the raw material for such bags which is cloth described in paragraphs 315 and 316 be left upon the dutiable list.

That is my chief recommendation, Mr. Chairman, and the reason for making it is this: By the provisions of the so-called farmers' free list bill, passed about 18 months ago, H. R. 44013, Sixty-second Congress, I believe your committee proposed putting upon the free list various articles, including burlap for bags or sacks, composed wholly or in part of jute or burlap, or other material suitable for bagging or sacking agricultural products. In other words, you propose putting upon the free list bags or sacks composed wholly or in part of materials suitable for bagging or sacking agricultural products.

Gentlemen, it is not clear whether in the wording of this bill you had in mind to put cotton bags upon the free list, but the result of the passage of that bill; that is, had it become a law the result would have been that practically all the cotton-cloth bags made in this country would have been admitted free of duty.

On January 23, the second day devoted to the cotton schedule, the first witness was Theodore F. Miller, of Philadelphia, who asked that the present rate on jacquard upholstery goods be retained. Charles M. Howard, vice-president of the Windsor Print Works, North Adams, Mass., followed with a statement on print goods:

Mr. Howard—According to the latest figures available, 1911, there are in the United States about 29 establishments equipped to do cotton printing, ranging from 2 to 5 machines, the United States Finishing Co. having 50 machines. These mills operate a total of 392 machines, and we estimate the average daily product of each machine to be 250 pieces of 50 yards each. We have a daily consumption of cloth of 98,000 pieces, or per working year of 300 days 29,400,000 pieces, or

1,470,000,000 yards. This is printed material alone, and does not include dyed cotton fabrics. These figures give you an idea of an industry the magnitude of which deserves serious consideration.

In England a few years ago the large printers formed a trust called the "Calico Printers' Association." There are a few independents, but the business is largely controlled by this association. They group the products in the different mills to cheapen production. I understand they are very autocratic, not printing or selling to anyone who does not give them all of their printing business.

There is no lack of domestic competition in this field. It is persistent and keeps prices down to the lowest point. The production of our cotton printing mills when running full would more than supply any domestic demand for our products. Business has been poor for the last few years, but the outlook for the future, if undisturbed, is more hopeful. It has been very difficult in the last few years for printers to make any money.

Mr. Fordney—The difference that you pay in wages over wages paid in Great Britain for the same class of labor is from 50 to 200 per cent.?

Mr. Howard—Yes, sir. I think the Tariff Board showed that our cost is approximately the same as theirs, but they make so few goods. They make small runs. I asked a gentleman there how small a quantity they would take and they said four pieces, that is, 6, 7 or 8 colors, and that is what brings up their cost on account of the small runs. That mill in Manchester that I spoke of, where they have 45 machines, and where their product was just half of our product made on 14 machines, when I told them they said nothing, but they evidently did not believe me. They sent one of their men over a year or two years ago and he told me they thought I was telling fairy tales, and he also said that I did not put it strong enough. That is the only reason we can make goods as low as we can on account of the volume.

Mr. Kitchin—Did a representative of the Tariff Board examine your industry?

Mr. Howard—Yes, sir. They went through our mills. They examined three mills and ours was one of them.

Mr. Kitchin—They examined your mills and others and then examined the English mills that came in competition with you and the tariff board reported that it cost you on an average less to mercerize and bleach and dye and print than it does in England, did they not?

Mr. Howard—As I remember, they said it was about the same.

Mr. Kitchin—You do not mind my reading to you?

Mr. Howard—No.

Mr. Kitchin—"Finishing includes the processes of bleaching, printing, dyeing, mercerizing, etc." It is the general rule in England that the finishing of cotton fabrics is carried on in establishments separate and distinct from the weaving mills. This is also true in a large measure in the United States. Since the converter or the weaving manufacturer must pay the actual commission charges, the comparison of these finishing charges in England and the United States is adequate to show the relative cost of finishing in the two countries.

Arthur H. Lowe, of Fitchburg, Mass., urged that the cotton schedule be revised on a conservative basis:

Mr. Lowe—We do not appear here to claim that all the rates of duty now existing are right, but we do urge that the committee continually keep before it the effect upon hundreds of thousands of people of a sudden and radical change. I believe that the schedule submitted today to your committee by the committee of the American Cotton Manufacturing Association represents the lowest rates that it is wise to make in any case, and I think that the rates upon the finer goods should be higher. I urge that none of the rates be made lower than the schedule submitted.

In view of the fact that labor is a large proportion of the cost of producing fine goods, running sometimes as high as 60 per cent. of the total cost, we claim that the rates of duty should be highest upon such goods into which the larger percentage of labor enters.

I believe in the creation of a permanent tariff commission, before whom tariff schedules, rates, aand conditions shall be laid, as railroad matters are now laid before the Interstate Commerce Commission. Its power would probably be only advisory, but such a commission would readily decide whether an industry was suffering because of too low a tariff or discover if excessive profits were being made on account of too high a tariff.

I believe that the present system of duty should be preserved. Innumerable troubles are sure to come under the ad valorem system. The ad valorem duties would protect us favorably when business is good and we least need such protection; and would work to our disadvantage during times of bad business when we need the most protection. Undervaluations cannot be prevented, unless you could incorporate into the administration part of the act something like publicity of invoices.

"A comparison of 16 specific samples for which finishing data were obtained shows that in most cases the differences between the charges in the two countries were slight, but that the American charges were slightly lower on most of the samples."

Mr. Howard—If you will pardon me, they included in that bleached goods and printed goods and took the average.

Mr. Kitchin—They also took the printed goods separately, too.

Mr. Howard—I understood, I could not state positively——

Mr. Kitchin (interposing)—You really think, now, with your knowledge of the business, that they did not get the information correct?

Mr. Howard—I do not think they got it correct on the printed goods, although, as I said——

Mr. Kitchin (interposing)—They have the data correct on all these other businesses except yours?

Mr. Howard—I would say that, because they probably went into this very thoroughly. I know they did with us; but as I stated to the gentleman on my right, the difference between England —I have taken England as the point, you know, and I presume it is the same in Germany—it is on account of their small products.

Mr. Kitchin—Really, if we were to write this bill according to the Tariff Board's report, we would not allow you any duty at all on the printed goods, would we? I do not say that we are going to do it, but if we did do it we would not allow you any duty.

Mr. Howard—I do not know, but I think you would.

Mr. Kitchin—You are not so much in favor of the Tariff Board now as you were before they made this report, are you?

Mr. Howard—Yes, I am; I believe in having a tariff board. I am sure we would be very glad to have them do it.

Mr. Kitchin—After making that report, do you want us to write a bill in accordance with that report?

Mr. Howard—I want you to write a bill and give us protection, because if you do not they will come over here and do all the business.

Mr. Kitchin—When the Tariff Board reports that we do not need protection upon a certain specific article, do you think that the Tariff Board is wrong, and that we really should give protection whether they say it needs it or not?

Mr. Howard—I have not read the report. Undoubtedly they know more about it than I do. But I know we need protection, and if we do not get it——

Mr. Kitchin (interposing)—But the Tariff Board says that you do not need protection.

Mr. Howard—Then in that they are wrong.

Mr. Kitchin—That is the point I am trying to make.

Mr. Harrison—You manufacture from 17 1/2-cent ginghams to 37 1/2-cent ginghams?

Mr. Lowe—Yes, sir.

Mr. Kitchin—Is that a retail or wholesale price?

Mr. Lowe—A retail price.

Mr. Harrison—And those are manufactured to compete in our markets with the Anderson ginghams, from abroad, I understood you to say?

Mr. Lowe—Yes, sir.

Mr. Harrison—They are very much like the Anderson, are they not?

Mr. Lowe—We try to make them better.

Mr. Harrison—Well, are they not so much alike that it would be difficult for any one not an expert to tell where these ginghams were bought, whether abroad or in Fitchburg?

Mr. Lowe—I think that may be so in some cases.

Mr. Harrison—How do the prices of your ginghams compare with the Anderson ginghams in our markets?

Mr. Lowe—I think the prices are substantially the same.

Mr. Harrison—Just exactly the same?

Mr. Lowe—The prices vary, of course, in fancy goods and goods of that nature, depending much upon the patterns and coloring and weave.

Mr. Harrison—So that your price is fixed by the unit value at the customhouse, plus the duty?

Mr. Lowe—Yes, sir; practically.

George A. Tenney, of the Monadnock Mills, Claremont, N. H., who was the next witness, made a statement in regard to the tariff on cotton bedspreads:

Mr. Tenney—I am not adverse to a revision of the tariff or a reduction of the same, provided sufficient protection is given to the American manufacturer to adjust the difference in labor cost here and abroad; provided sufficient protection is given to the American manufacturer to allow the American manufacturer to successfully compete with the foreigner who manufactures cotton bedspreads or quilts.

Cotton bedspreads or quilts are provided for in the present tariff under paragraph 330 of Schedule I, where all other cotton goods not specifically named in the schedule are to come in under an ad valorem duty of 45 per cent.

Mr. Palmer—What do you mean by the protection necessary to permit successful competition with the foreigner?

Mr. Tenney—I mean such protection as will enable us to sell our goods in competition with the foreign manufacturer in this country.

Mr. Palmer—Are you suggesting a lowering of the duty on the lower grades of goods?

Mr. Tenney—Yes, sir; I suggest the lowering of the duty on the lower grades of goods, a graduated duty, a duty, as I stated, that shall consider the quality and value of the spread. In other words, I do not want the same duty on a cheap spread that I want on a high-priced spread.

Mr. Palmer—An ad valorem duty would be a graduated duty, would it not?

Mr. Tenney—It would be graduated as to value; yes, sir. But the value of the spread is altogether different; that is, the labor cost in the high-grade spread is altogether different than it is in the low-grade spread.

Mr. Palmer—How much do you want us to reduce the duty on the low-priced spread?

Mr. Tenney—I would suggest that we have a schedule based on the schedule which Mr. Parker handed in for jacquard weaves. I think that would be satisfactory; I think we would be satisfied with that.

I did not come down here prepared with any schedule, and I have not looked into the matter sufficiently, and I do not know how I can do so, because I cannot get the English figures to enable me to state positively what would protect us or what would be right, but we would be satisfied to start with his suggestion.

Mr. Palmer—Was his rate a suggestion below the present rate on low-priced goods?

Mr. Tenney—His rate, I think, was 25 per cent. for a minimum and 50 per cent. for a maximum.

Mr. Palmer—You want the cheaper articles reduced?

Mr. Tenney—Yes, sir.

Mr. Palmer—And the higher articles increased?

Mr. Tenney—Yes, sir.

The Chairman—Do you think that would make a more competitive rate all along the line?

Mr. Tenney—I feel absolutely positive about it, and I think I can prove it, too.

Mr. Palmer—You are tending in the right direction all right.

Mr. Longworth—In view of the fact you have to pay the American wage scale protection is necessary?

Mr. Tenney—I think it is necessary; absolutely necessary.

Mr. Longworth—And that is all you are asking?

Mr. Tenney—That is all we are asking for.

I recommend that cotton bedspreads be specifically named in the new tariff and graded as to quality and value. My reason for this is that there is a difference of over 500 per cent. in value between various grades of spreads imported into this country. Other cotton goods are subject to duty according to grade and value, and bedspreads should be likewise.

Bedspreads fringed and scalloped should be classed separately and carry an extra duty because of the additional labor expended upon them. The present duty is only sufficient to give us the protection needed to compete successfully with the English manufacturer. For a better administration of the present law, I would suggest that ways and means be found to prevent the undervaluation of goods imported where the duty is ad valorem.

Charles A. Conant, of the Esmond Mfg. Co., Esmond, R. I., made a statement in regard to the tariff on blankets:

Mr. Conant—We do not very well like the sweeping of these high-grade blankets into a class with wash rags, mop cloths, and inferior material of that sort. It is a little humiliating to have high-class goods of that character classed with wash rags.

That rate of 25 per cent., embodied in that paragraph of the bill which passed at the last session, may be applicable to a lower grade of blanket, but certainly the process of producing the higher grade blankets justifies putting them in a different schedule.

What we would like would be a separate clause for blankets, specifically providing, roughly speaking, that the plain blanket should pay 25 per cent., as we have it in the bill which passed the last House, that the wool finish should pay 35 per cent. and the jacquard finish 45 per cent., as it is under the existing law. Therefore, we are asking no increase in the rate even on the finest grade of blankets, and have no objection to a reduction on these staple blankets which are used by the masses. I think a special clause is preferable.

The Chairman—There are none of the low-grade blankets imported at all?

Mr. Conant—No. The present duty is I believe substantially prohibitive of the lower grades being imported.

Mr. Rainey—What grades do you manufacture?

Mr. Conant—Principally the finer grades of wool finish, but some staples.

A lower rate is quite adequate on staples, as Mr. Underwood suggested.

Mr. Longworth—Are there many blankets made only of cotton?

Mr. Conant—Nearly all blankets. I think the larger proportion of blankets now made are made of cotton. "Wool finish" does not mean that they are made of wool, but finished in such a way as to give them the same quality as wool.

Mr. Rainey—They pay 45 per cent., do they not?

Mr. Conant—They pay 45 per cent. under the existing law, under the general clause for "Miscellaneous manufactures of cotton not otherwise enumerated."

Mr. Rainey—Do you want them raised above 45 per cent.?

Mr. Conant—Not at all; 45 per cent. is quite satisfactory upon the high-grade blankets.

Joseph McDonald, a lawyer, of Pawtucket, R. I., asked for a general reduction of the cotton goods tariff:

Mr. McDonald—I am here asking that the tariff taxation upon cotton goods be lowered all along the line in the interest of the people of this country as a whole.

I deny the proposition that has been put forth here again and again during this hearing that labor is paid higher in this country than it is abroad. On that proposition I am willing to stand, and I think it can be demonstrated to the satisfaction of this committee that that statement is true. We have here in this country a large number of workmen, more or less skilled. That there is a difference in weekly amounts, I am willing to concede; but the amount of wages received per week and the rate of wages on any given unit of product is an altogether different proposition.

Mr. Longworth—Are you representing any particular organization?

Mr. McDonald—No; I think I am representing the victims.

Mr. Longworth—You are here on your own responsibility?

Mr. McDonald—I am here on my own responsibility; yes.

Mr. Needham—What is your business now?

Mr. McDonald—I am a lawyer.

Mr. Needham—How long have you been practicing law?

Mr. McDonald—About eight years. Up to that time I worked in the mills.

Mr. Needham—Of what political party are you a member?

Mr. McDonald—I am a Democrat. (Laughter.)

The hearing of the flax, hemp and jute tariff was held on January 24. J. B. Dimmick, of the Scranton (Pa.), Lace Curtain Co., was the first witness:

While we could urge with propriety that no reduction should be made in the duty on lace-curtain machinery—which is made exclusively abroad—inasmuch as our plant is capitalized, as are all the others, upon the basis of cost plus the duty, yet we submit that, if the general economic policy of the country looks to foreign as well as domestic competition in the long run, and we are not prepared to say that it should not, the first and only step at present in that direction should be a reduction in the tariff upon machinery rather than in the tariff upon product, for such a policy would make it possible for domestic plants to equalize at least one factor in the cost of production.

We ask that the duty on 6 to 10 points should be left as now existing, and from 11 to 16 points should be advanced, this request for an advance being clearly justified by the fact that high-grade curtains are a distinct luxury and by the importation of same.

The most competitive point is in the high grades, 10 points and up.

The Chairman—Both for cotton and linen?

Mr. Dimmick—I cannot speak at all about linen.

The Chairman—In the lower grades of lace curtains there are practically no importations, are there?

Mr. Dimmick—There are practically no importations, but I believe from the figures which are shown in our exhibit as to the English curtains that are obtained through Canada, in our endeavor to sell goods there, it is very equally balanced.

William L. Turner asked that the present tariff on lace curtains and Levers laces be retained. Charles Sisson, of the Hope Webbing Co., Providence, R. I., asked that the tariff on braids be kept unchanged:

If this industry, which is comparatively a new one, can remain undisturbed by adverse legislation, it can be largely developed. In this connection, as showing the apparently excessive cost of distributing manufactured goods to consumers in the United States, attention is invited to the accompanying deposition of Percy Gardner, of New York City, our selling agent for featherstitch braids.

It appears from this statement in some instances the cost to the consumer is about three times the amount received by the manufacturers. The excessive cost of distributing manufactured goods in the United States is a factor demanding more consideration than it has generally received.

J. J. Culbertson, of Texas, wanted burlap and jute bags put on the free list, as he used them in bagging the product of his cotton seed oil mill in Texas. Nathaniel Stevens, of the Stevens Linen Works, Webster, Mass., was the next witness:

If your committee should decide to remove the duty from flax and flax tow, we should strongly urge retaining a duty under paragraph 335, flax hackled, known as "dressed line." If the duty was removed from hackled flax, it would throw a large number of people out of work in this country. We are now making large expenditures to improve our hackling department.

If your committee will decide to lower the duty on yarn, the duty on our goods should be lowered to a less degree. The difference between the duty on yarn and our goods is very slight. I do not know that in the yarn we use there is very much difference, and possibly that is why the industry has not flourished. I wish it would flourish. I would be glad to see competition.

The Chairman—Are the yarns competitive—is there a reasonable competition in yarns?

Mr. Stevens—You mean in this—

The Chairman—I mean the imports as compared with the American consumption in yarns. In this paragraph it is apparent it is competitive, but I wish to know about the yarns.

Mr. Stevens—I could not tell you, Mr. Underwood, about that because we do not handle yarn. We import the raw flax.

The Chairman—And manufacture your own?

Mr. Stevens—And manufacture the finished product. We run on just one line of goods so as to keep our cost down. Our goods have been an established trade for years, and we are going on, we are progressing, and I simply come here to let you gentlemen know that we have got a flourishing business up there, and we want to be able to go on, and I hope to see the linen-weaving industry increase. That is all.

J. E. Barbour, of Allentown, Pa., asked for free raw materials for his flax industry:

I wish your committee to take into consideration the fact that the duty on flax machinery is 45 per cent., practically all of which machinery must be imported.

My plant cost me just over 50 per cent. more than I could have erected one precisely the same abroad.

I would make the following suggestions: Paragraph 333, flax straw, present tariff $5 per ton, free. Flax unhackled or dressed, present tariff 1 cent per pound, free. Paragraph 335, flax hackled, known as dressed line, 3 cents per pound, free. Paragraph 336, tow of flax $20 per ton, free.

If all this raw material was put on the free list it would in no way adversely affect those concerns or the labor employed in hackling or dressing flax in this country, as a certain amount of hackling is necessary for the successful prosecution of the business in this country and only this amount is being done at present.

I recommend that the first portion of paragraph 338 be changed to read: "Single yarns not finer than five lea or number, one and one-half cents per pound and 10 per centum ad valorem," and the balance of this paragraph be allowed to remain as at present, that is, 35 per centum ad valorem.

I believe that the one-half cent (increase) per pound that I have asked for will not increase the cost to the consumer the slightest.

Edward D. Metcalf, of the Columbian Rope Co., Auburn, N. Y., asked for a reduction of the duty on hemp, hemp tow and line of hemp, and that the refund of the Philippine export duty on hemp be continued:

The Chairman—Mr. Metcalf, the American manufacturer or purchaser of Manila hemp gets that export tax, does he not?

Mr. Metcalf—The manufacturer does, and it decreases the cost of his material just so much.

The Chairman—Here is the proposition: We levy a tax on all hemp, or rather our Government forces the Philippine Government to levy a tax on all hemp that is exported from the Philippine Islands. If that hemp goes into England or any other foreign country the tax that is collected goes into the treasury of the Philippine Government for the benefit of that country, does it not?

Mr. Metcalf—It does. But I do not think we

forced it upon them. I think it was there before we forced it. I think the Spanish Government had it.

The Chairman—Then it is continuing a bad law of Spain. But Spain gave the Philippine Islands all the tax she levied. We have forced this export tax upon them, and if hemp goes to a foreign country that tax goes into the Philippine treasury?

Mr. Metcalf—Yes.

The Chairman—But if it comes to our country we take it and absorb it either for the benefit of the hemp manufacturer or, as you say, the manufacturer turns it over to the American consumer. Whoever gets it, it does not make any difference. I want to know whether you think it is right to continue a condition of that kind?

Mr. Metcalf—I think it would be just as unjust for the State of New York to put an export tax on their product against the citizens of the State of Pennsylvania and therefore it is just as unjust for any country controlled by the United States Government to put a tax on the manufacturers of another portion of the United States, a special tax which is not recognized in the Constitution, and which in fact the Constitution has practically prohibited.

The hearings on the wool schedule attracted a large crowd of interested spectators, the opening gun being fired by Frank P. Bennett, editor of the Wool and Cotton Reporter, who advocated free wool and 50 per cent. ad valorem on goods:

The main objection to the duty on wool is not only that it hampers the manufacturers, but it hampers a proper sheep husbandry in the United States. The people of the United States are very fond of lamb, roast lamb, lamb chops, and lamb in every form; but there is not the desire in this country for heavy mutton that there is abroad in England and France and elsewhere. There have never been half enough lambs produced in this country to supply the demand.

If we had free wool and the enormous political atmosphere which has surrounded the sheep husbandry was removed, instead of producing 50 per cent. of the lambs in the United States we would produce 100 per cent.

I have been familiar with the wool growing in the West and sheep husbandry in the West for 35 years, and it is astonishing the extent to which they keep what they call dry sheep—that is wethers or denaturalized male sheep. They could sell them as lambs for $7; they keep them for three years, and have to sell them as full-grown sheep for three or four dollars, for the sake of the wool. I maintain that it will not be difficult for this committee to satisfy itself that with free wool and the proper development of the sheep husbandry in the United States more sheep will be kept than today, and it will be a growing industry instead of a decadent industry.

Mr. Fordney—When wool was on the free list I have seen sheep sold for 75 cents a carcass in the State of Michigan, and wool for 9 cents a pound.

Mr. Bennett—They were sheep that ought to have been sold years before.

Mr. Fordney—They ought to have been sold before they took the duty off, and then they would have gotten something for them.

At one point Congressman Longworth and the witness engaged in an earnest controversy over the number of sheep in Ohio:

Mr. Longworth—Mr. Bennett's statement was that in 1900 they had in Ohio over 2,000,000 sheep.

Mr. Bennett—In 1910 we had over 2,000,000 sheep in Ohio.

Mr. Rainey—That is a great many more over.

Mr. Longworth—We had 2,648,250 sheep in Ohio.

Mr. Rainey—In what year?

Mr. Longworth—In 1900.

Mr. Rainey—I am speaking of 1910.

Mr. Longworth—In 1910 we had 2,897,648 sheep. How many sheep did we have in 1896?

Mr. Bennett—Before the tariff of 1867 you had over 7,000,000.

Mr. Longworth—I am asking you a question. You can answer it if you can. How many sheep did we have in Ohio in 1896?

Mr. Bennett—I have not got it right at my finger tips.

Mr. Longworth—Have you any remote idea?

Mr. Bennett—If we are to pursue the truth——

Mr. Longworth (interposing)—I am asking you a plain question. You can answer it or not. You may refuse to answer it.

Mr. Bennett—I will not refuse to answer any question.

Mr. Longworth—How many sheep did we have in Ohio in 1896?

Mr. Bennett—The general tendency in Ohio has been downward. It was over 7,000,000 previous to 1867. I have those figures right here. I will take the time to get the figures for the specific year 1896.

Mr. Rainey—He cannot give the year 1906, because it was not a census year. You cannot give it either. He can give it for any census year.

Mr. Bennett—That seems a pretty good answer. My argument in regard to the State of Ohio was not made on the year 1896 or any particular year. I was not there There might have been scab or some other kind of disease.

On the second day of the wool hearing Mr. Bennett returned to make an explanation:

Mr. Bennett—Mr. Fordney asked me a question yesterday and I want to modify my answer. I think his question was something like this: Would 20 per cent. duty on wool divert sheep husbandry into less unprofitable channels than 29 per cent.? The question came to me suddenly and I gave a somewhat hasty answer in the affirmative. As I have thought it over, I think my answer is in the negative, absolutely. It is not the amount of the duty on wool, it is the

influence of the duty, deceiving the farmer and misleading him into unprofitable work and an unprofitable expenditure of his energies by extending the hand of the Government over an industry which ought not to be protected.

Mr. Hill—You realize that 50 per cent. duty on a cheap piece of low-grade cloth is a great deal more in the difference in the cost of production and the conversion cost than in a high-grade piece of cloth?

Mr. Bennett—I do not know about that. I think I could call on some of the gentlemen here who would tell you that the percentage of labor in the cheap clothes is higher than in the high-priced clothes.

Mr. Hill—Would you apply the same principle?

Mr. Bennett—To cotton? No; I do not think so.

Mr. Hill—Why not?

Mr. Bennett—I would have to take a little time to answer that question.

Mr. Hill—Far more labor in sorting, coloring, dyeing, weaving, and in designs and patterns than in ordinary woolen cloth for daily use than there is in cotton, is there not?

Mr. Bennett—I think I would say in a general way that the labor cost on the very cheap fabric—that the percentage of labor cost—is greater than on the high-priced fabric in woolens and worsteds. It is the high-priced dyestuffs and the high-priced machinery that makes the high prices in woolens and worsteds. I think I would say—and there is no manufacturer here that would not agree with me—that the percentage of labor cost in the cheaper fabric is greater than in the higher-priced fabric.

Eben S. Stevens, a manufacturer of low grade woolens asked that shoddy, noils, wool waste, rags and flocks be put on the free list.

John P. Wood, president of the National Association of Wool Manufacturers, was the next witness. He presented an elaborate written statement:

The question then naturally arises: If on some commodities the duty is more than necessary and not availed of in domestic prices, why not reduce these rates to the limits required for protection? To this there could be no possible objection if that could be done without at the same time reducing the duties on other commodities far below the line which would permit their manufacture in this country. The reason for this is that there is such a vast variety of woolen goods, and the differentiation is so infinite, that it is impracticable so to classify and define them that each shall be subject to a rate of duty just sufficient and no more than sufficient. The objection and the difficulty of overcoming it have been frankly admitted and explained whenever a revision of the tariff has been under consideration in Congress.

The woolen industry has been sincerely desirous of eliminating all such instances, for while such inequalities exist merely in theory and not at all in actual operative effect, their elimination would obviate much of the criticism of the woolen schedule upon the part of those who discuss it academically without the slightest knowledge of its practical working. But the difficulty of overcoming these theoretical objections has thus far been found insurmountable.

It is a matter of common knowledge not only to those identified with the trade, but also to all others who have given any study to the subject, that no greater opportunities for profit exist in the making of goods upon which there is a seeming excess of protection. If there were, no one would now be engaged in the manufacture of the finer qualities, the production of which has so greatly increased during the past 15 years, because under favorable tariff rates improvement of technical skill has been developed, and the increasingly intense competition in the field of cheaper products has attracted a larger interest in the finer kinds.

It is often alleged that the application of the tariff exclusively in ad valorem form would result in obviating all inequalities and assure equal and exact results. But this is notoriously untrue, for the labor or conversion cost of many of the cheaper fabrics is as great as for similar goods of higher value, the difference in cost being due solely to the difference in the value of the raw material. An example of this kind is shown in Appendix IV by two cloths of similar structure and weight, one being composed wholly of wool and the other having a cotton warp and wool weft. The clothmaker's cost for making these two fabrics is identical, but the finished values differ very much because of the widely different cost of the raw materials.

The amount of protective duty required for both cloths is the same; an ad valorem rate sufficient to produce that amount of duty when computed on the cheaper goods, would, when applied to the value of the more expensive cloth, produce an amount in excess of the required protection. On the other hand, if the rate be such as when applied to the higher-cost cloth will produce the required amount of duty, that rate when applied to the lower-priced goods would yield less than the required amount. Both these cloths are meritorious products, each intrinsically worth its cost. The cheaper one made partly of cotton is as durable and as thoroughly excellent at its price as the one of higher cost. If the manufacture of both is to be continued in this country, the ad valorem rate must be high enough to protect the cheaper cloth; and to offset the apparent inequality dependence must be placed upon the abundant domestic competition, just as has been the case under existing forms of duties which have been in effect for 18 of the last 22 years on low-cost cloths.

For classes of commodities which vary greatly in their units of value and in the ratio of labor cost to material cost; and which cannot be so grouped that purely specific rates can be applied with even approximately equal incidence, the compound duty is most suitable, obviating in a considerable degree those features of purely ad valorem duties which have made them objectionable, not only from the protectionist point of view, but equally to the Government and the honest im-

porter. The compound duties are especially applicable in the case of cloths in which the ratio of labor or conversion cost to total value increases as the value of the raw material decreases, as in the samples shown in Appendix IV. The cloth containing the cheaper raw material needs less compensatory duty but requires a larger ad valorem rate to produce (when computed on its lower value) the same factor of protection. This deficiency is automatically offset by absorbing part of the specific rate which is not required as compensatory duty.

This principle applies particularly in respect to dress goods, upon the cheaper forms of which the ad valorem rate, sufficient for more costly goods, would produce a sum altogether inadequate to cover the difference between the cost of manufacture here and abroad.

Opponents of the present wool schedule habitually discuss the specific duties as though intended always and only as compensatory for the raw material duty; and in those cases wherein the specific duty is obviously more than necessary to compensate for the wool duty, the rate is criticized as excessive and unwarranted. Whereas for many sorts of goods, and particularly those composed of the cheaper kinds of material, it was thoroughly understood when the law was enacted that the ad valorem rate was not in itself protective because of the low values upon which it was computed and the high ratio of manufacturing cost As to such goods the specific portion of the compound duty was known to be partly protective.

This association enters no objection to a duty on wool, if necessary to the continuance and further development of wool growing in this country, or for the raising of governmental revenue, we, as protectionists, approve it. We merely emphasize the fact that neither Government nor wool growers can derive any advantage from a duty on wool unless the wool can be used in American mills, and it will be possible to use it in American mills only if the aggregate duty on wooien products includes full compensation for the wool duty and an adequate protective duty fully to cover the higher costs of manufacture.

Mr. Palmer—I understood you to say that you had suggested in your statement that you submitted to the committee a schedule of rates.

Mr. Wood—We have, and those rates are, so far as the protective rates are concerned, irrespective of the compensatory wool duty, which we pay no attention to, substantially the same as are now in force.

Mr. Palmer—You are suggesting no reduction then in the rate?

Mr. Wood—Not in the protective rates. We have nothing to say about compensatory duties.

Mr. Palmer—And you have nothing to say about the compensatory duties?

Mr. Wood—No, sir.

Mr. Palmer—That is, you are not considering the question of duties on raw material?

Mr. Wood—None whatever.

Mr. Palmer—What would you say, as a matter of fact, about the duties on the raw material that carry into the finished product; are they more than compensatory now?

Mr. Wood—In respect to many classes of goods they undoubtedly are.

Mr. Palmer—To what extent?

Mr. Wood—Very greatly. The tariff report, for instance, shows that in respect to those samples they are probably 100 or more per cent. in the aggregate ad valorem equivalents.

Mr. Palmer—They are double as much as they ought to be to be purely compensatory?

Mr. Wood—That is in the aggregate of both. It is difficult, in the case of those fabrics, to separate that part which is protective and that part which is compensatory, because the tariff deals with the aggregate duty.

Mr. Kitchin—You think that that bill (the Hill bill) if enacted into law would really seriously cripple your industry?

Mr. Wood—Certain branches of it would have been entirely ruined.

Mr. Kitchin—It would entirely ruin some and cripple most all other branches of it?

Mr. Wood—I stand by my own statement.

Mr. Kitchin—Would you mind telling what portion of the industry that bill would have crippled or destroyed?

Mr. Wood—I cannot do that. It would be impossible. Certainly it would have been most serious to the combing, worsted, and yarn spinning.

Mr. Kitchin—Did you read the Tariff Board's report on the woolen industry, with relation to the present tariff?

Mr. Wood—Yes, sir.

Mr. Kitchin—Did you agree with it?

Mr. Wood—I prefer to answer that by making a general statement regarding the Tariff Board.

I always believed that a tariff board or commission or bureau of the Government was a useful thing to this committee in gathering information and statistics. When the commission or the board was appointed I realized, and so stated at the time, that for men who had no technical knowledge of the industry to undertake to first familiarize their subordinates and selves with the industry, and then make a technical examination and report upon all its many branches in a period of about eight months would be quite impossible. I believe that the board did very excellent work, but the report is very incomplete, and, like any great work of that kind, if the authors of it had the opportunity I have no doubt that they would bring out a revised edition and make many amendments and corrections. They have already signified, as I understand it, that in respect to several things corrections of more or less minor nature are necessary. The report varies in its completeness. With respect to some parts of the industry it is fairly complete; with respect to others it is not complete, although the information that they have is useful and interesting, but, like any work of that kind, prepared very hastily, by a large number of persons, without adequate opportunity to revise and correct it, no one can safely quote from it and say that this is right and that is wrong. I am not prepared to either indorse or dispute the conclusions excepting as they will be supported by my own experience.

Mr. Kitchin—Do you think the Tariff Board

adopted the proper methods in ascertaining the cost of production?

Mr. Wood—Well, it adopted two or three methods, as I understand it. One of them was to take specific articles and endeavor to find the conversion cost in this country and others; and another method, I think, was to take the efficiency of operatives on the same kind of work in differing countries and measure that efficiency in terms of earning cost. Both of those would be useful methods, one checking the other.

The Chairman—I want to ask you whether the lower grades of woolen or cloth have any competition from abroad?

Mr. Wood—None whatever.

The Chairman—And it is the higher grades of woolen cloth that have foreign competition?

Mr. Wood—Yes, sir; the very highest grades have very keen competition.

The Chairman—About where, if you can explain it to me, does the line of prohibitive rates cease and where does the line of competition begin?

Mr. Wood—Much as I would like to answer that directly and honestly, it is quite impossible, Mr. Underwood, because the variety of fabrics is so great, and the variety in the same value of fabrics and fabrics of a dollar a pound or a dollar a yard have no common value. The factories which make that, the cost will differ; the cloths that cost the same price per pound or per yard, the proportion the labor cost to material cost will bear varies.

The Chairman—Mr. Wood, I think you understand that this committee is desirous of writing a reasonably competitive schedule all along the line. Have you any suggestions that you can make to us as to how we can ascertain the facts to that?

Mr. Wood—I have not, and I do not think you can. The only suggestion I would make for your very serious consideration is this: I have heard the chairman's statement to other witnesses about the desirability of creating competition on the various commodities of these schedules. In the woolen schedule the difficulty that you will encounter is this, that any change in rates which you make will create a competition all along the line of different products of different values. You can lower rates of various degrees, and at whatever point you lower that rate you will make competition from abroad on the values above those affected by this rate almost prohibitory; that is, they will supply almost the entire American demand and you will still leave on the values below that level practically prohibitive, just as you have it. It depends on how far down you want to increase the competition. That competition will not be equal with all manufacturers here. You will put certain mills entirely out of business, and certain others on lower values will be given just as much immunity from competition as they enjoy today. That is the practical difficulty that you will——

The Charman (interposing)—Is there no dividing line according to values?

Mr. Wood—No, sir; because the dividing line—there can be a dividing line, according to value, of course, but the dividing at any value will not leave above that line goods in which the foreign rate of cost is identical or substantially identical. It will vary very greatly. If you fix your line at 70 cents or 60 cents or any other rate the foreign cost or the labor cost in the fabrics above that line will vary very greatly and the amount necessary to equalize the conditions abroad and here, so that you would have just what you desire—a competitive tariff in respect to some; it would be prohibitory still in respect to some, and it would leave others come in here to the exclusion of American manufactures. There is the practical difficulty that you will be confronted with, as the proposition is to make the duty in ad valorem form; and if you make the rate based on the foreign values, and you intend that that shall be just exactly competitive for some in the group of products—if the prices, prices of raw material abroad, which form a considerable factor, rise materially above the present level, it will again be prohibitive, none will come in. In the case of decline of material, you will increase your competition much above whatever may have been in your mind when the rate was fixed. That is our answer, Mr. Chairman, to all the objections that have been made to the existing law.

The Chairman—But still the question of whether a prohibitive rate should be adopted, or a competitive rate, according to the verdict that has been found, the committee would be glad to have any assistance in providing a rate that is only reasonably competitive, if you can give it any.

Mr. Wood—I was only pointing out, recognizing the obligation upon you, the difficulties that have confronted your predecessors, and I do not think you can. That is not a disputatious statement.

The Chairman—I am asking you as an expert to get information of value to the committee, for the guidance of the committee. Suppose we revise these rates to what we conceive to be somewhat near reasonably competitive, realizing that some of them will not probably be competitive, can we use any reasonable language that will direct the customs bureaus to so classify these imports as to let us know what goods are coming and what are not coming in?

Mr. Wood—No, sir.

The Chairman—No classification can be made?

Mr. Wood—No, sir.

The Chairman—Then, we have simply got, in your judgment, to sail out in the dark and try to save the patient, if we can?

Mr. Wood—Exactly.

Mr. James—Are you in favor of free wool?

Mr. Wood—I do not wish to express any opinion with regard to the wool duty, at all.

Mr. James—Have you not expressed any in a brief you have filed?

Mr. Wood—No, sir.

Mr. James—Are you unwilling, then, to give the committee your opinion about whether wool ought to be free or taxed?

Mr. Wood—Quite unwilling.

Mr. Hull—What is the judgment, so far as you have absorbed it, of the manufacturers you represent with respect to the merits of specific rates on

the scoured content, as recommended by the tariff board?

Mr. Wood—We have no opinion on that. It is a novel proposition. It certainly seems to be attended with very great administrative difficulty and we are in grave doubt as to its practicability. We do not undertake to say it cannot be done. If this committee can be persuaded it is practicable, we have no criticism to offer. We do not advocate it. We know nothing about it.

Mr. Hull—It is true that a large number of the manufacturers have expressed their serious doubt as to its practicability?

Mr. Wood—I think individually probably quite a number have. On the other hand, I think there are some who have believed it might be done. It is a very novel and unique proposition and there are just those doubts exist that would naturally exist among different men regarding a unique and novel proposition.

Patrick McGraw, a wool puller and comber of tops at Pittsburg, Pa., asked for an increase in the differential between wool on the skin and wool off, also for a duty on tops higher than that in the Underwood-LaFollette bill:

Mr. Longworth—Do you want to double your present duty on wool off the skin?

Mr. McGraw—The present differential duty is only 1 cent a pound.

Mr. Longworth—You want to quadruple it?

Mr. McGraw—We want to quadruple it.

Mr. Longworth—You are a brave man.

Mr. McGraw—I am glad to have you say so.

Mr. Fordney—It takes a brave man to be honest, does it not?

Mr. McGraw—It does so.

Mr. McGraw—Another item that we are interested in is that of tops. We make tops as well as pulling wool, and in your last bill I think your differential on tops was only something like 6 per cent. ad valorem. That would not anywhere nearly equalize the difference between making tops in this country and making them abroad. Of course, the present duty on tops is entirely too high, and is not at all necessary. The one that was included in the last bill would not be anywhere nearly high enough.

Smith E. Allison, of the General Roofing Co., York, Pa., asked that "roofing" rags be placed on the free list:

Mr. Harrison—Suppose the committee did not wish to put it on the free list, what would be the figure you would suggest at which these rags should be imported?

Mr. Allison—They would not be imported at all.

Mr. Harrison—Do you think under 20 per cent duty——

Mr. Allison—It would be impossible.

Mr. Harrison—That would still be prohibitive?

Mr. Allison—Absolutely.

Mr. Harrison—At 3 cents a pound?

Mr. Allison—It would be just sufficient to cut us out of that line of business entirely.

Mr. Harrison—Supppose we adopted a 10 per cent. rate?

Mr. Allison—It would not stand a cent.

Mr. Harrison—That sounds a little unreasonable.

Mr. Allison—I believe, when you consider the price of 1 cent to a cent and a half per pound, we are paying now——

Mr. Harrison—A 10 per cent. ad valorem duty on rags worth 3 cents per pound is three-tenths of a cent per pound, is it not?

Mr. Allison—That is sufficient to kill it. This business is not coming in now, and it will not come in unless it is free.

Mr. Fordney—If you could designate them as "roofing rags," and enact some law that would prohibit their use for clothing, that would be one thing.

Mr. Allison—It would be impossible to use them for clothing.

Mr. Fordney—They use them in shoddy by blowing them into the web?

Mr. Allison—Not that grade of rags.

Mr. Fordney—They can blow anything?

Mr. Allison—No; not that. They cannot do it with those rags.

William J. Holt, of Manayunk, Pa., asked for a higher differential between wool and top than the Underwool-LaFollette Bill provided:

Mr. Holt—I came here really in the interest of the spinners of wool and worsted yarns.

The Chairman—If we place a duty on raw wool of 20 per cent. and on tops of 25 per cent., you do not think 5 per cent. additional ad valorem is sufficient?

Mr. Holt—Absolutely I do not, Mr. Chairman. For instance, if the wool would shrink half, which it will in all wools alike, it would immediately jump the cost of the scoured wool up to 40 per cent. To get tops you have got to scour the wool, and, more than that, you have got to put a certain amount of labor on it which would easily equal 5 cents a pound as our charges go.

The Chairman—The ad valorem rate advances the value as well as the rate.

Mr. Holt—I do not quite understand you.

The Chairman—If you had a pound of wool valued at 25 cents and had a tax of 20 per cent.——

Mr. Holt (interrupting)—Are you speaking of unscoured wool now?

The Chairman—Yes. At 20 per cent. you have a tax of 5 cents a pound. When that wool goes into a top how much is the wool in the top worth?

Mr. Holt—You must scour it to get it into a top. Do you mean how much is the wool worth in a top? If the wool costs in the grease 25 cents a pound and the impost would be 5 cents a pound, that would make it cost 30 cents.

The Chairman—What is a pound of top worth?

Mr. Holt—You might as well ask me what is a man worth.

The Chairman—Take the same class of wool.

Mr. Holt—Tops are usually worth, speaking offhand, 10 cents a pound above the cost of the scoured wool. That is a quick way of arriving at it.

The Chairman—Then if the wool is worth 25 cents, your top would be worth 35 cents and your original 20 per cent. on this raw wool has increased from 5 cents per pound to 7 cents per pound; you have made 2 cents there besides the increase in the ad valorem rate.

Mr. Holt—You haven't given credit to the fact that if you were putting that impost of 20 per cent. on the scoured wool then it would be all right. But it is not on the scoured wool; it is on wool in the grease.

The Chairman—In our bill it is the same on scoured wool as it is on wool in the grease.

Mr. Holt—The same on scoured as it is on wool in the grease?

The Chairman—Yes.

Mr. Holt—Then I have not read it right. If it is the same on scoured, it is all right, and I agree with you.

The Chairman—Then you and the Tariff Board and ourselves have all got together.

Mr. Holt—Yes.

O. M. Stafford, president of the Cleveland (O.) Worsted Mills, was the next witness:

Mr. Stafford—There are two things that I have come here to talk about in Schedule K—Schedule K, the storm center of the tariff. One gentleman here this morning asked the question whether it was not the keystone of protective duties. It is certainly the storm center of tariff agitation. There are two facts that I desire to lay before you:

The first is the effect of the present rates on the duty under Schedule K on the prices obtained by the cloth manufacturers. That is one proposition.

The second is, When should the application of the law that is to be passed take effect?

We know that there exists the keenest competition among the top makers, for we have been frequently in the market for the purchase of tops. We know that the keenest competition exists among the yarn spinners for we are frequently in the market to buy yarn. We know that the keenest competition exists among the cloth manufacturers themselves.

Each season we have refused orders on many grades of cloths in competition with other mills because in our ability to produce them at the prices at which they were placed on the market by other manufacturers, in many instances the price named being less than our cost, irrespective of the fact that we believe that our facilities for manufacturing are good as any in the country.

A man went to England on a visit and we sent a piece of one of our cloths with him with the request that he get the English price on that cloth. The English manufacturer did not know for whom or why the information was desired. He sent back a price which would have permitted that particular cloth to have come to the doors of the New York Customhouse at 54 cents a yard.

The present rate of duty under Schedule K, taking the specific per pound and the ad valorem, would have permitted us to have asked in competition with England, and sold it, $1.11 per yard. As a matter of fact we have sold hundreds of thousands of yards of that identical cloth, all through this last six months, for 81.7 cents per yard.

And the difference between the 54 cents on English goods coming to the port of entry at New York, and our price, is made up of the duty on wool, the difference in wages of the American workingmen, and some decent little profit for us.

Already there is an indisputable going down in our line of business. The orders are much smaller. There is a great deal of hesitation. Our customers are coming to us and asking a guaranty against loss through tariff reductions. In other words, they are willing to place their orders and go forward, providing we, as manufacturers, are willing to guarantee to refund to them any shrinkage in price. We understand that some mills have already made such a bargain.

If sufficient time is given, it would enable everyone to go on with certainty and make contracts for a complete season and allow time to adjust conditions for the following season without great loss and without interruption to the trade itself, thus guaranteeing constant employment to the operatives.

No one can be the gainer by an abrupt application of a law shortly after its passage. It is but fair that sufficient time, as was the case when specie payments were resumed, be given for adjustments to be made with as little jar and loss as possible.

William Goldman, president of the National Association of Clothiers, presented a brief in which he made a number of definite recommendations:

We favor a duty of 20 per cent. on raw wool, as proposed in the Underwood bill. It would be desirable, indeed, that wool should be free, in order that wool products, which enter so largely into general consumption, should be produced as cheaply as possible. Against free wool there are, however, many arguments. In the first place, change from a duty of 11 cents per pound on wool in the grease, equivalent to 45 per cent. ad valorem, would be so revolutionary as to invite inevitable reaction and return to higher rates. It would, therefore, be opposed to real tariff reform. In the second place, we do not believe that the woolgrowing industry can at this time prosper without moderate protection.

While specifically indorsing a rate of 20 per cent. on raw wool, we protest against any higher duty than 20 per cent. The world-wide tendency is for wool to increase in price.

Consideration of all the facts involved indicate that with a duty of 20 per cent. on wool, the rate on cloth necessary to bring about fair competitive conditions is 55 per cent.

Under existing rates on cloth several members of the committee are able to bring in certain classes of fabrics in competition with American goods. Moreover, aside from price, style in the fabric is an important element in creating a demand for imported cloth. Even when foreign goods are within 5 or 10 cents of the price per yard for the domestic product, the American clothier will buy a considerable percentage of im-

ported goods, for the reason that he is always eager to diversify his product. Foreign cloths enable him to do so, not only because they are different in style, but also because they possess an individuality quite distinct from that of our own fabrics. These facts indicate that even though the duty on wool is lowered for the benefit of the American manufacturer, under a rate of 55 per cent. on cloth, importations will materially increase.

The existing duty on cloth in 1910 was equivalent to 97.27 per cent. ad valorem. A reduction to 55 per cent. means substantially 50 cents per yard on cloths now imported. Furthermore, the elimination of the weight duty under the ad valorem system will make it possible for cheaper grades of cloth now entirely shut out to enter and compete. This, of itself, opens a wide avenue for foreign goods. Materially increased importations will necessarily follow, and at the rate named bring in a large revenue.

If the duty levied on cloth is made 55 per cent., the corresponding rate on clothing indicated by the difference in foreign and domestic costs is 75 per cent.

We heartily indorse the application of the principle of ad valorem rates in assessing duties on all items of Schedule K. We realize the force of the argument against ad valorem duties on the ground that undervaluations will creep in. We are, however, convinced that no other method so nearly approaches justice to all concerned.

Channing Smith, of Cherry Valley, Mass., spoke on the tariff as affecting low grade woolens:

I ask that whatsoever duty be determined upon, be so assessed as to prevent undervaluation, and would urge a specific duty of at least 45 per cent. above that on raw materials. If a straight specific duty is not adopted, then I ask that part of the duty be made specific at a square-yard rate on goods valued at not more than 40 cents per pound.

F. C. Ellenwood, of Red Bluff, Cal., appeared in behalf of the wool growers, and advocated a wool duty of 18 cents per scoured pound:

Our protection must be measured not by the duty on the grease pound, but by the duty paid to obtain sufficient wool to make a pound of scoured wool.

We would here call the attention of this committee to the fact that under no form of wool duty can the wool grower be benefited to the full extent of that duty. To determine this fact we have during the past season sent many fleeces of wool to London, where we obtained the London price. In every instance it was found that domestic wool failed to equal the London price plus the actual tariff paid to import a competing wool by a considerable amount. The average for all wool shows that we failed to obtain 22 per cent. of the actual duty paid.

At the present time the duty on scoured wool is 33 cents and if it were reduced to 18 cents it would mean a reduction of 45 per cent. in the compensatory duty. It is this duty that concerns the consumer, for it is this that he pays because of the tariff upon wool. We, therefore, hope that in a readjustment of the schedule that your committee may see its way clear to grant a specific duty on the scoured content of imported wool of not less than 18 cents per pound. Such a rate would give a competitive tariff.

Mr. Hull—The price of scoured wool varies probably from 10 to 60 cents, does it not, according to the quality?

Mr. Ellenwood—It varies considerably; yes, sir. I do not know that any of it is as low as 10 cents, but it varies considerably.

Mr. Hull—Well, if you fastened a flat rate of specific duty of 18 cents a pound to 60 cents a pound scoured wool, and then compared that with the same rate on 10 or 15 or 20 cents a pound scoured wool, it would constitute a great inequality, would it not?

Mr. Ellenwood—From that viewpoint it would; yes, sir. But the right way to overcome that, I think, that this law should be framed so it should be as near fair as possible in every respect. I think that is the only possible objection that I know of that can be offered against the scoured pound, and to remedy that I would suggest that an ad valorem rate limit be placed, at which the scoured pound rate would not exceed an ad valorem equivalent of so much, whatever this committee might think was right.

Mr. Hull—Would it not be better just to fix an ad valorem in the first place?

Mr. Ellenwood—No, sir; because that would hurt the woolgrowers first, very materially, on account of undervaluation. The undervaluations would be very great, and the value of the wools imported on an ad valorem method of collecting duties would not be anywhere near what they are today, in my opinion, and the woolgrower would not receive in the way of protection, in my judgment, more than 50 or 60 per cent. of the amount that would be levied under the ad valorem basis. For instance, if it were 20 per cent., as has been suggested by this committee, the woolgrower would not receive more than 12 per cent. in the way of protection.

Mr. Hull—Well, he does not receive a satisfactory degree of protection at all under the present rate, does he, in certain respects?

Mr. Ellenwood—Well, in certain respects, no. We have stated our objections to the present law and the reasons for them, as I have stated here, are owing to the changed conditions.

Edward Moir, president of the Carded Woolen Manufacturers' Association, presented in his individual capacity a brief in which he recommended a duty of 45 per cent. ad valorem on cloths in addition to what may be necessary to compensate for the tariff to be placed on wool. W. C. Hunneman, of Boston, who is associated with the Carded Woolen Manufacturers' Association,

recommended an adequately protective ad valorem duty on wool and a net protective duty of 45 per cent. on cloths.

A brief signed by R. A. Strong, J. R. Hinchcliffe, Austin Levy and A. M. Patterson, representing the American Association of Woolen and Worsted Manufacturers, and by H. J. Hamill, Mark D. Ring and H. G. Niles, Jr., representing the Carded Woolen Manufacturers' Association, contained the following recommendation:

We suggest the following as minimum rates under which the greater part of each branch of the industry concerned can continue to compete:

Wool.—Should a duty be imposed on wool, the rates hereafter given must be increased to cover the greater cost of raw material.

Noils and other wastes not especially provided for should not bear a higher rate of duty than may be imposed on wools.

Top waste, slubbing waste, roving waste, and ring waste should bear the same rate of duty as is suggested for tops.

Tops.—Fifteen per cent. ad valorem. This rate we believe sufficient to cover the difference in cost between Europe and the United States of a 60-shilling top at 56 cents, or a 40-shilling top at 32 cents. If the market quotations were 36 cents and 15 cents, respectively, as in July, 1901, it would not be competitive.

Yarns.—A rate equal to one-fourth cent per count plus the duty on the top; the sum being approximately equal to 35 per cent. ad valorem.

Cloth—Fifty-five per cent. ad valorem. We make no distinction between cloths, flannels, blankets and dress goods, because no simple classification exists.

Julius Forstmann, president of the Forstmann & Huffman Co., Passaic, N. J., submitted a brief in which he recommended the following ad valorem rates: Wool, 20 per cent. ad valorem; tops, 32 per cent.; roving, 38 per cent.; yarn, 42 to 90 per cent., according to size and condition; cloths valued not over 30 cents per pound, 55 per cent.; 30 to 50 cents, 60 per cent.; 50 to 70 cents, 65 per cent.; 70 to 90 cents, 70 per cent.; over 90 cents, 75 per cent.; cloths valued at not over 30 cents per pound, 55 per cent.; 30 to 50 cents, 60 per cent.; 50 to 70 cents, 65 per cent.; 70 to 90 cents, 70 per cent.; over 90 cents, 75 per cent.

Charles F. Fairbanks, treasurer of the Bigelow Carpet Co., George McNeir, vice-president, W. & J. Sloane, Robert Dornan, of Philadelphia, R. B. Perkins, president Hartford Carpet Co., and A. J. Abbott, treasurer Abbott Worsted Co., presented a brief in behalf of "most of the carpet manufacturers of the country":

It is not our purpose to haunt the Halls of Congress, or importune the various members of the committee on this subject. We refer you to the arguments made before the Payne committee, which are as sound today as they were then, and which show, as we believe, that we are entitled to the relief we ask.

We do not ask for lower duties on raw materials and high duties on our manufactured products, for we expect the compensating duty on our manufactured goods to be reduced in the same proportion as the duties are reduced on our raw materials.

Where is the justice of assessing the same duty per pound on wool yielding only 40 pounds of clean wool out of 100 pounds in the grease as on wool yielding 75 pounds of clean wool out of 100 pounds of wool in the grease, thus practically doubling the duty per pound to the manufacturer who brings in wool yielding only 40 pounds?

Our manufacturers can bid against them (foreign manufacturers) up to 12 cents, but there they must stop, or have an additional duty of 3 cents per pound charged against the purchase. An ad valorem duty would remove this restraint on business and result in increased imports of the better grades of carpet wools, thus insuring increased revenue to the Government.

Franklin W. Hobbs presented a brief signed by the Arlington Mills, Victoria Mills, Barre Wool Combing Co., Hudson Worsted Co., M. T. Stevens & Sons Co., Lorraine Mfg. Co., and the Erben-Harding Co., asking for an increase of the duty on wool grease:

Gentlemen: We respectfully and earnestly request you to increase the duty now levied on this product from one-fourth cent per pound to one-half cent per pound.

We believe that public policy justifies this duty, and, if it is increased as requested, so that the business can be carried on without loss, it will induce other manufacturers to put in plants for the recovery of what has hitherto been waste and will also be a public benefaction in encouraging action for the purification of the rivers which will necessarily follow.

There are now nearly 9,000,000 spindles in the spinning districts of Russia, about three-fifths of which are ring spindles, and the annual consumption of cotton is about 1,750,000 bales. Of this quantity nearly 1,200,000 bales are grown in cotton fields under the Russian Government in Central Asia. Only about 842,000 bales are obtained from the United States.

HOSIERY AND UNDERWEAR MANUFACTURERS

The annual convention and exhibition of the National Association of Hosiery and Underwear Manufacturers will be held in the first regiment armory, Philadelphia, on May 6 to 9. Following is the program as announced:

Morning Session, Tuesday, May 6—Open Session. Invocation. Welcome address, Hon. Rudolph Blankenburg, mayor of Philadelphia. Reading of minutes of 1912 convention. Annual report of the president. Annual report of the secretary. Report of the treasurer. Reports of standing and special committees. Reports of sub-associations. Report of board of directors. Address, "The Quid Pro Quo of the Hosiery Industry," by Charles Vezin, of Hinchman Vezin Co. Address by Elbert Hubbard, East Aurora, N. Y. Impromptu discussion. Address, "Arbitration," by Fred W. Simons, of Simons & Struve Hosiery Co. Communications. Miscellaneous business. Appointment of nominating committee.

Afternoon Session, May 6—Executive Session. 2.30 p. m.—Meeting of the various hosiery sub-associations, as arranged and announced at previous session. See bulletin board at entrance to armory. Special meeting of the underwear members. Manufacturers not members may attend this session upon application to the secretary-treasurer. It is the earnest wish of the officers that all delegates promptly attend all sub-meetings in which their branch of the industry is under discussion.

Morning Session, Wednesday, May 7—Meeting will be called to order promptly at 10 a. m. Address by Hon. J. Hampton Moore. Reports from special committees. Miscellaneous business. Address on "Advertising." Speaker to be announced later. Open discussion. Address by representative of Knit Goods Buyers' Association. Response by P. C. Withers, Illinois Knitting Co. Report of Cost Committee, by Robert C. Blood, of John Blood & Co. Open discussion. New business. Resolutions. Question box. Discussions on questions presented. Election of officers. Appointment of committees. Selection of dates for next meeting. Adjournment.

Afternoon Session, May 7—Executive. 2.30 p. m.—Meeting of the various hosiery sub-associations, as arranged and announced at previous sessions. Special meeting of the underwear members. In addition to the discussion of topics to be announced later, a question box will be introduced, into which inquiries and questions may be dropped by any one present. Box will be opened from time to time and contents will be read by the secretary-treasurer. Subjects suggested through this channel should prove of special interest and their discussion will redound to the members' welfare.

Wednesday Evening, May 7—Banquet and Vaudeville Smoker. Elaborate arrangements have been perfected for a banquet and vaudeville smoker, which will be given at the Scottish Rite Building, southwest corner of Broad and Race Sts., beginning promptly at 8.30 o'clock. This entertainment, including refreshments, is tendered complimentary to the knitting manufacturers, knit goods buyers, exhibitors and their representatives. A limited number of admission tickets will be issued to each concern. Extra tickets may be purchased by special request. All applications for admission tickets must be made to the secretary not later than May 6.

Morning Session, Thursday, May 8—For the Knitting Manufacturers—Members and Non-Members—Executive. Meeting will be called to order promptly at 10 o'clock. Address, "Practical Methods for the Manufacture of Silk Knitted Goods." Speaker to be announced later. Address, "Scientific Management," by Frederick W. Taylor, Philadelphia. Open discussion on topics mentioned below. (Discussion on each subject will be formally opened by a member.) Net weighted yarns. Credit bureau department. Collection department. Cancellations—How best corrected. Question box. Impromptu discussion on the various questions asked. The exhibition will be held on May 9.

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THE TEXTILE EXHIBITORS' ASSOCIATION INCORPORATES

The adjourned meeting of the Textile Exhibitors' Association was held in January to take formal action on the matter of incorporation. The entire membership of the Association was represented either in person or by proxy and a uninimous vote was cast in favor of incorporating under the Massachusetts laws.

The new company will be known as the Textile Exhibitors' Association Inc. The capital stock is to be $3,000, divided into sixty shares of a par value of $50 each. The old association turns over its assets to the new company and each of the members of the old association receives a paid up share of stock in the new company. The by-laws proposed by the executive committee, under the advice of counsel, were considered and accepted with some slight amendments.

The following gentlemen were elected Directors of the new company and will act also as Incorporators: F. H. Bishop, Universal Winding Co.; H. W. Butterworth, H. W. Butterworth & Sons Co.; E. F. Hathaway, American Warp Drawing Machine Co.; Frank B. Comins, American Moistening Co.; L. E. Tracy, L. E. Tracy & Co.; C. F. Hutchins, Crompton & Knowles Loom Works; E. H. Rooney, Whitin Machine Works, and Chester I. Campbell.

The officers of the company are: Presi-

dent, F. H. Bishop; Vice-President, E. F. Hathaway and Secretary-Treasurer, Chester I. Campbell.

The question of holding the exhibition in the spring was not discussed, as it had seemed to be the general opinion at the previous meeting that no exhibition should be held this year.

Fifteen-Cent Cotton

Dallas, Tex., Dec. 13, 1912.

Editor Textile World Record:

I have before me the editorial in the Textile World Record of December, 1912, in which you take for your text the "Southern States Cotton Corporation," its plans and intentions. Having taken enough interest in this corporation to make it the subject of a leading editorial in two issues of your periodical, I assume that you will, of course, desire to have the fullest information on the subject for the purpose of either more completely condemning it if shown to be unworthy, or giving it the support of your paper should it be found that such support was deserved by it. It is not to be believed for a moment that you would intentionally misrepresent a movement which is to be so far-reaching in its good effects for the entire United States of America, and particularly for those states who do now, and have for the past one hundred years, furnished the clothing for the world's population.

In opening this subject, you state that "As a result of our October comment, the seventh advertisement which appeared in the 'Manchester Guardian' of November 1st, was signed by George Dole Wadley, President of the Southern States Cotton Corporation, and took the form of a reply to our criticism."

First, I wish to disabuse your mind of any thought that this corporation has any wish to cover up its plans or intentions now or that it has had any such desire in the past. In order to do this, I will say that your comments on the Corporation in your October issue, had nothing at all to do with my attaching my name to the seventh article appearing in the "Manchester Guardian," and your assumption as quoted above, was entirely gratuitous. I have written you twice before stating that this corporation had endeavored for about one year and a half to bring before the public its plan of operation, and that it courted the utmost publicity. The promoters of it desire to have it thoroughly understood, and if there are any weak places in it, that they be corrected by discussion.

Further on in this article, you state "One so-called fundamental error underlying the plan proposed by the Southern States Corporation is the assumption that the selling price of cotton should naturally increase as the cost of production increases." I fail to see where such an assumption is a fundamental error. If the selling price of a commodity should not increase with the cost of its production, how long will any industry producing the article thrive, or even exist? Who will agree with you that the selling price of any commodity should stand still if the cost of production goes up? Your illustration of the copper mine which operates at a loss and is finally closed as a result, is a complete reply to your assertion that our proposition as such is a fundamental error. The cotton grower of the Southern States faces the situation of the assumed copper mine which is being operated at a loss, and either he must change the conditions surrounding the sale of his production or else go out of business of raising cotton. We all realize that the latter cannot be thought of, so that the first must be accomplished if the supply of cotton for the needs of the world is to continue to be raised in the South. Artificial means will not be used to bring this about, but the plan of this corporation is going to develop a condition which will distribute the sale of cotton raised in the South over the entire year of twelve months in the place of allowing it to be forced artificially and by bad business methods on the market in so short a time that the users cannot assimilate it; therefore, it presents a fair subject for speculation by those who gain its legitimate profits, but who perform no real services in doing so. We all realize that cotton is held in storage now, but we do not consider by whom.

This corporation proposes to know the people who hold this cotton and to make the growers of it themselves do it. They propose to measure out the cotton which they raise to those who use it, when they want it, and at a price which should be satisfactory to all, as it will be placed on a basis only of profit to those who grow it. There will be no attempt made to extort unreasonable or illegal profits therefrom.

Where is the interference with the law of supply and demand? You should easily see that the plan of this company provides for the law of supply and demand, assuming its proper function in the marketing of cotton. You surely know and understand that the present system of marketing cotton does not permit the supply and demand theory to govern. If you indeed needed any other instance besides that of last year, it could be found in almost any year of the past fifty. It is enough, however, to recall to your mind the experience of the farmers of the South in the year 1911, when with a predicted crop of fourteen and a half million bales, we saw prices steadily drop until cotton sold in the South at 8 cents per pound. When it had been taken away from those that spent a year's work in producing it, about the middle of December when the world was assured of a crop, not only of 14,000,000 bales, but over 16,000,000, we saw cotton go up from 8 cents per pound until in the following summer, it sold at 13 cents in the interior of the South. Who got the benefit or this rise in prices? Was it the man who deserved it by his work? Or was it he who

gained it by manipulation of the market? Which would have been the greatest benefit to the country at large and the South particularly? The possession of this wealth by the agriculturalists who number themselves by the million, or the speculative element who are numbered by the hundreds?

You then go on to say, "Having started with an unsound proposition, the Southern States Cotton Corporation tries to back it up by the absurd claim that for the past ten years, statistics show that cotton has cost 11.67 cents per pound to produce it." The unsoundness of this proposition is of your own making, and is not in the proposition itself. You have taken the above from Mr. Anderson's letter of November 26th, evidently having never read the statements which have been sent you by me, or willfully preferring to use Mr. Anderson's letter in the place of the documentary evidence as to the cost of cotton, which the corporation's published statements show.

You state that the estimate of the cost of cotton is predicated on the cost of that raised on the 7-horse farm of which neither the location nor the name of the owner is given. For your information, if it will be more satisfactory to you, I will state that the 7-horse farm is my own and is located in Monroe County, Georgia—that the statement of the cost of cotton relates solely and only to that place. The value in this statement of the other farm products was the market value at which they were sold, or could have been sold, and each one of these crops, corn, oats, peas and pork, showed a profit at the prices obtained for them. Cotton was the only crop raised on the place which did not show this profit. So much for the 11.67 cents per pound for cotton. Now then, to the facts relating to the raising of cotton in the South.

W. B. Yeary, vice-president for the State of Texas for the Southern States Cotton Corporation, has been at a great effort to go into the details of cultivating an acre of each kind of land which is planted in cotton in the South. I sent you a paper covering these discussions and you had it in hand when you wrote your article. If you will now refer to it, you will find that the average cost of raising the cotton crop in the South, based on these figures, amounted to 14 1/10 cents per pound, then go back to my own statement published in another pamphlet which has been sent you, and you will find that based on the cost of growing cotton on my own place in Georgia, when taken in connection with the United States Government yield and acreage figures in all of the cotton-growing states, I make the average cost of cotton 14 cents per pound, that in only two of the States, North and South Carolina, is the cost less than that shown on my own place in the State of Georgia.

No one denies that the cost of cotton varies with the different land and conditions embraced in the territory lying between Virginia and Arizona, nor that the march of the boll weevil, supply of labor and other factors enter into the cost question; but we challenge you, or any other authority, or supposed authority on the question of cost, to show where our figures are in error. We will not accept a bald statement that we are wrong; we must be shown. It is not enough in discussing this question to say that the above statements cannot be true, that if they were, the South would have been bankrupt long ago? These statements are true and the people who raise cotton have been drawing on their labor, which is their capital, for the past fifty years of its culture. They have now come to the point where they intend to fix a marketing system by which their labor, or capital, will draw interest in order that they may enjoy not only the necessities of life, but the pleasures as well, and practically provide proper living conditions and education for their children.

Maintaining a fixed price does not necessarily involve a monopoly of a product. The corporation could not hope to have a monopoly of the cotton raising in the South. This crop is produced by the united labors of some three million farmers. Who will say that it is possible to weld three million different people into one company? We do not expect this, but we do expect to unite enough of these people into one company to hold the temporary surplus of cotton which has heretofore been used in the first three months of the cotton season to depress the price of the entire crop. This corporation has founded its plan on the statement that 15,000,000 bales of cotton should bring $1,250,000,000. That is, that it should bring 15 cents per pound, which we regard as a legitimate price. The plan does provide that if more than this is produced and not required by the world, that the farmers themselves will hold this surplus until it is wanted at their price.

This corporation has not fashioned its plan on that of the Brazilian idea of marketing coffee. You can make such a statement, but it is not true; the two plans are similar, only in the one fact that both have for their object the raising of the price of a world's necessity to a remunerative one to the producers. The plan does indeed need careful scrutiny from everyone whether he is in a branch of the cotton trade, a grower or consumer. We contend that it harms no one and benefits all. Any plan which makes one man a remunerative worker, benefits every industry in the world by so much. Any plan which prevents any individual in the world from having a remunerative price for his labor, injures every industry or individual to that extent. It is true that our representations this year have caused the cotton growers of the South to have renewed hope and by that hope of salvation, has enabled them to hold off of the market two million or more bales of their cotton. It is true that we believe the coming year will see these same people, by the help of and through this same corporation, hold all of their cotton until they can sell it at their price instead of as now, accepting a price placed on it by people having no interest in their welfare.

In conclusion, allow me to say that I have insinuated nothing against you or your position; I state plainly that I believe that you are in opposition to this movement. To substantiate this belief, I refer to both of the articles which you have published concerning this corporation. Neither I nor the others engaged with me in this movement are opposed to anyone's using any lawful and hon-

est method in protecting themselves, and particularly do I believe that the people in the cotton-growing section of the United States have that right common to all freemen, and we intend to use every effort to arouse them to put this right into use at this time. This controversy was not of my seeking, but the point having been made by you in your magazine, I believe I have a right to ask that you give my reply as much prominence in your publication as the articles which have called it forth.

Yours very truly,
Southern States Cotton Corporation,
Geo. D. Wadley.

AN AD VALOREM WOOL TARIFF

II.—CARDED WOOLEN

By Our English Correspondent

The distinction between combing wools, available for worsted machinery and clothing wools becomes harder to maintain. The point is sometimes put as a poser: "Who can tell where combing wool ends and clothing wool begins?" Men comb shorter wools and card longer ones than ever and there is a considerable overlap of qualities not entirely unusable by owners of either class of machines. The fact complicates the difficulty of making an exact division between the relatively long and relatively short wools, but does not obscure the truth that there are materials which are only utilizable by carding. While these form the main subject of this article it should not be unprofitable to devote a few words to the relative positions in England of the worsted and the carded woolen trades.

Before a period which may be indicated roughly as the early '70s, carded woolen supplied everyone's best suits. "I do give and bequeath unto my son Thomas my Sunday best black doeskin suit," is as regular a feature of old wills as directions concerning the disposal of lands and furniture. Worsted came in and drove broadcloth effectually out of ceremonial wear and the field for fine plain woolen cloth grew smaller and smaller until finally it was restricted, as now, to livery and billiard cloth and a few expensive overcoatings of undesired merit. The manufacturers who failed to follow the fashion languished and died, whereas those who took up with worsted on the one hand, or fancy woolens on the other, have in several cases survived to this day and are still flourishing. Low woolens are expressly excluded from the scope of this paragraph. So far as concerns fine milled woolens—and outside the small business in the specialties named—the trade is dead and is succeeded by worsted. Sunday suits, funeral, wedding and evening suits are no longer made of woolen. While they have been disappearing worsted has been made of finer and ever shorter wools to meet the demand worsted yarn of irreproachable levelness has been evolved. This development, which is in no way peculiar to Britain, implies a restriction of the demand for the very finest and shortest wools.

The fine cloth trade has been transferred, but the carded woolen industry is not smaller, but larger in consequence and its demands for material are very much greater than could practicably be supplied from the annual clip. A fine tweed trade remains and currently it is a highly profitable one and large enough to cause passing anxieties to manufacturers of the fine fancy worsteds which Scotch tweeds replace in certain seasons. Both in Scotland and the West of England manufacturers of these highest grade tweeds have safeguarded their position by adding worsted to their ranges and some of the costliest of fancy worsteds are of Scotch production and Bradford yarn. Into the tweeds nothing goes but first-hand wool. Scotch cheviots and Australian merino are used in Scotland; Irish wool and English Down wools in Ireland; and Down wools and merino are used in the West of England. They are goods which carry a high price, including a large cost in design, interest and selling expenses. The consumption of wool by these manufacturers can only be estimated roughly at best, but perhaps 30,000,000 of clean wool is near the mark.

THE LOW WOOLEN TRADE

The two classes of fine cloth are apart from the great body of the English carded woolen business which is classifiable most readily by districts. Low plain woolens,

mostly with cotton warps, have been saved from the oblivion into which their expensive prototypes have dropped and the survival is very clearly due to the price at which they can be produced. The goods are cheaper than anything that can be made out of combing wool, are warm and moderately substantial, so that their demand is economically secure. The army, navy and police are uniformed in cloths of a medium grade containing waste, but not cotton. There are medium goods containing neither waste nor cotton, such as the self-colored serge blanket cloths made on blanket machinery from short wool and used for ladies' overcoats. Beyond these, and the blankets that are made chiefly for noils, is the family of low, plain or self-colored goods divisible into light and heavy. The light class ranging up to about 16 ozs. per yard covers Leeds meltons with soft mungo filling and cheviots or serges made from harder wastes. The prices run from 14 cents or so up to 60 cents, with 20 cents as a median. The goods are better and worse in point of dye finish, some are suitable for newly-breeched children, others for older boys and men and many more for dress or costumes only. The heavy class is identifiable rather with Batley and the weights run up to 32 ozs. for pilot cloths, beavers, presidents and naps. The scale of prices begins about 20 cents and ends at about 70, with 30 cents or so as the dominant price. Rags and cotton without wool are the materials of the trade and for three years American rags have been a very prominent ingredient.

Again there are the medium tweeds of which some are almost all wool, and the lower tweeds in which wool forms a small and eventually a vanishing quantity. The use of wool for cheap tweeds is increasing in most districts, partly because makers are struggling to a higher level, partly because of fashions which have required more wool. The lowest of fancy woolens are like the lowest of plains, except for some additional feature of color or pattern and they do not seriously imitate fine goods. But in Colne Valley tweeds running from 30 cents to 66 cents, with 50 cents or so as the principal price, articles are made which simulate Scotch or Donegal with fair plausibility. Of these goods the staple raw material is pulled stockings and the wool most mixed with them is New Zealand locks and pieces.

BUYING WOOL IN ENGLAND

It is time to consider how the manufacturers buy the raw materials to make the several sorts of fabrics described. Those who want the finest merino the world can provide have of course to be represented at the auctions at which it is offered. The demand is almost beyond consideration of price and nothing less than the best will do for the best purposes. Those who want locks and pieces for carding blends for the largest mills are also represented at the auctions and buy up line after line of serviceable stuff as if they were topmakers. Again the largest users of rags buy in bulks only limited by the extent of the offerings. The point is that in carded woolen, as in worsted, there are standardized demands as well as demands unstandardized. Take any of the eight o'clock trains running from Bradford and Halifax into the woolen districts. Men with large black cloth bags bulging with samples of two sheets of this sort or five sheets of that, some with only short wool, others with noils or mill wastes. Each has his own classes of wool—the only ones with which the stapler regularly deals—and knows pretty closely what every manufacturer on his list can use and what he will pay. No doubt these oddments carry good profits to enable so many men to spend time over quantities which are seldom large, but they are specialists catering after their own fashion for manufacturing specialists. Many articles they carry do not come into production in large quantities and consequently are not sold in large bulks.

Alternatively, penetrate to the offices of dealers who are known to contract for the waste from different mills. The waste varies from time to time, but the customer can get ordinary deliveries of a quality equal to a standard sample. The dealer blends wastes to make a standard "specialty" in a manner parallel to that in which a topmaker blends

wools for tops. Go into the heavy woolen district to any of the places where rags are bought, pulled and carbonized. The case is identical, for here again supplies of varying quality and quantity are brought up to a uniform standard month after month and year after year. Some manufacturers depend on this outside assistance and others do the blending for themselves. Blends are bought to blend again, and so on. Below the whole process runs the intention to make everything serve. If one source of supply is cut off the business does not stop, because its fount is all sources.

WOOLEN BLENDING

There are salient differences between worsted and woolen blending. It has been shown that the market topmaker juggles with fleece and skin, scoured and greasy in blending preparatory to washing. The worsted spinner has the option denied to the woolen men of blending in the drawing frames by running in one head of one sliver with one or two heads of another. Woolen blending has all to be done in the stack before carding and by universal consent it is a more ticklish operation than worsted blending. The disparity in the length of fibers may be immensely greater and is greater. The worsted yarn is intended to emerge from the finishing room substantially unchanged in its chief characteristics, but in some woolen blending allowance has to be made for a quite revolutionary change. A new blend is one of two things: A mixture which the carder foresees will produce in the end a result that he has pictured in his mind; or it is an attempt to reproduce a given result. In either case he wants elbow-room to change and his success or his failure depends ultimately on his liberty and aptitude in blending. In the view of more than one or two Yorkshire manufacturers of cheap tweeds, looms are just appliances for getting rid of yarn and except by starting aright with the best and cheapest materials they have no notion of making a profit. They want wool if wool is cheapest and they want the especial sort of wool that comes in cheapest, which today may be one kind and tomorrow another. They want more waste and less wool if shoddy is the better bargain, and more than anything they want freedom to pick and choose without artificial impediment. Without this, they are acutely aware that their day is done and there is no such hurrying and emphasis in any department of British politics as among those who disclaim any faintest intention of imposing a duty on wool and cotton. The carding engineers have developed a nice sense of what will serve and what will not, but this is nothing without materials to work on.

It will of course be admitted that the British industry is carried on in the teeth of the world and that for a sale of 98,000,000 yards a year it is dependent on overseas markets. Without access to all materials it is equally impossible that such a foreign trade should have been built up or that carders should have obtained their present mastery of their work. Carders get no practice on materials they cannot obtain and their success is a matter of practice and the most efficient machinery.

WHAT WILL THE TARIFF ADMIT?

An ad valorem tariff offers to American woolen carders at least the prospect of more varieties of wool. There are skin and scoured wools of decided interest to carders, as well as off-sorts from long wools which are not at present imported, although the fleeces are bought for America, and there are dealers who make a business of these. A duty based on value and freed from arbitrary distinctions does not discriminate against one variety of wool more than another. But does it open the door to mill wastes, standardized and other, to rags and pulled rags, noils, laps, extract and so on? If so what English supplies does it bring within reach? The information is sketchy and it is useless to turn to the 1907 Census of Production returns for a comprehensive reply. It can be said that England last year (1911) exported a surplus 11 1/2 million pounds of pulled rags, 12 1/2 million pounds of wool waste and 17 million pounds of noils. The chief customer for all three was Germany and for waste and noils the second-

best customer is Russia, where a high tariff on raw woolen materials is retained. The Russian tariff is on a weight basis and as a result Russian imports of pulled rags from England leave in a strictly net weight condition, with more British workmanship in them than is the case with almost any other country. In Batley one can see rag wool for Russia being carded after pulling, along with fine scoured merino wools.

It is the opinion of some persons that our open door in America for British pulled worsteds and stockings would cause a considerable export. Rightly or wrongly, they say that our specialists in this line have developed an aptitude that would carry their productions into the United States as it has done into a round dozen of European countries. Undoubtedly the English rag pullers have had superior opportunities, but only experience can show how far they may carry.

The woolen manufacture is carried on chiefly by firms who make and sell cloth, but of late the department of yarn spinning has taken on a separate development and exports of carded woolen yarn are upon the increase. Purchase of woolen yarn by domestic worsted mills and weaving manufacturers is also increasing, and there is reason for thinking that some producers are willing to extend this branch of their affairs. The 5 3/4 pounds exported is a fleabite to the 85 million pounds of worsted yarn sent abroad, but the amount is growing fast and hence is mentioned.

While the prospects of a tariff change are taken very coolly by Yorkshire makers of cheap woolens, there is no reason to suppose that they have omitted to think of a condition that would allow their 50 cent goods to be landed in New York at $1, instead of at $1.50 or $2. Such a change would allow a larger number of British manufacturers to participate than would a reduction in the duties upon the more elementary forms of carded woolen material.

German cotton "sparterie" trimmings were exported to the extent of $13,980,000 in 1911, an increase of nearly $1,000,000 over 1910.

THE BOSTON WOOL TRADE ASSOCIATION

The annual dinner of this association at the Copley-Plaza, Boston, on Jan. 11, was attended by about two hundred members and their guests, a reception preceding the banquet. Jacob F. Brown, vice-president of the organization, acted as toastmaster, beginning his remarks with the reading of the following letter from the president, Jeremiah Williams:

I regret that I am unable to be with you tonight at the annual dinner of the association. I think every one will agree with me that this association through its committees and its officers has accomplished much in the single year of its existence and that much good comes to all of us through such gatherings as this. We are all getting to know each other better than ever before and a better acquaintance with one another is conducive to better business methods and fairer and squarer competition.

Trusting that the association may continue to prosper in future years as it has during the past year and wishing you all a Prosperous New Year, I remain,

Very sincerely yours,
Jeremiah Williams.

President Williams was absent on account of the wedding of Albert W. Elliot, a member of his firm, and a standing toast was drunk to Mr. and Mrs. Eliot. In greeting the association Mr. Brown said:

This association has completed the first year of its existence and in that time has given full proof that it was needed and has opened vistas of usefulness in the future. The work of the various committees has been earnest, conscientious and harmonious in managing the general affairs of the association, furnishing entertainments, settling trade differences, handling storage, insurance and transportation problems, improving methods of preparing wool for market, directing the compilation of reliable and valuable statistics, giving exhibitions of light and heavy weight woolen and worsted goods of American manufacture. A large reserve of good will and kindly feelings has been accumulated and this fund bids fair to be constantly increased.

The associate membership, open to those directly connected with the wool trade of Boston, has been appreciated but there are some who have not joined as apparently they feel they can derive no benefit from the association. This class of young men has my sympathy. I wonder how any young man wishing to succeed can fail to realize the many advantages of meeting and knowing practically all the members of the trade with which he is connected. It is to the profit and interest of the older members of the wool trade to meet the younger members; it is much more to the profit and interest of the younger members to meet the older members.

Of all the perplexing and interesting questions

of the day particularly in New England, the railroad problem is in the front rank. We are informed daily of "How not to run a railroad," but useful suggestions in a constructive way are few and far between. It is easy to tear down but very difficult to build up.

The air is full of criticisms and complaints. Some are just, some unjust; some are honest, some dishonest. The situation does not seem to clear but apparently is more mixed with a demoralizing tendency. No remedy is in sight but there is an unmistakable drift towards Government ownership.

The proper solution of the New England railroad problem is highly important to the business world, to the traveling public and the security-holders.

A letter from Charles F. Avery, chairman of the arbitration committee, who was unavoidably absent, was then read:

When you consider that the total sales of all classes of wool, greasy, washed and scoured, as well as noils and wastes, in the Boston market aggregate possibly fifty millions of dollars or more and that a hundred or more salesmen by sample or description are selling a large number of manufacturers engaged in the fabrication of all sorts of woolen and worsted goods; some sales for future deliveries, some contracts for periodical deliveries; many transactions by simple verbal contract; I say it is highly creditable to the wool merchants of Boston that only three disputes were referred to the arbitration committee for decision and award. One other case between four resident and non-resident members was presented, but settled by the disputants before it was acted upon by the committee.

The natural conclusion must be that the business has been conducted by sellers and buyers in a highly honorable manner and with due consideration for the rights of the purchaser in every detail. But this, while it may be a new thought to our committee, is without doubt the belief and has been for years, of the Boston banks and bankers primarily, and through them to the banks throughout the country who have applied the extra capital to carry on the wool business in the Boston market. And this credit is given, not to the wealthier concerns alone, but to every house in proportion to their resources and the standing they have secured in the trade.

I am led to speak on this matter, not from a desire to laud the wool trade, of which we are members, but because there is a widespread feeling among people in this country that banks and bankers are corraling all the money in the country for their own aggrandizement and the destruction of individual business. J. P. Morgan has testified that "the basis of credit is character," but the politicians do not believe it. It seems, therefore, no more than just and fair to give at least this illustration of the help of the banks, not to trusts, but to a business composed of many houses engaged in a legitimate business and acting in competition with each other; one of the most important trades in the country, which has been steadily concentrating in Boston, because of its nearness to consumers of wool, as well as the liberal financial encouragement furnished by moneyed institutions.

Toastmaster Brown called attention to the convention of the National Wool Growers' Association at Cheyenne, Wyo., and stated that the Boston Wool Trade Association, as in the two previous years, had sent a representative to the Cheyenne meeting in the person of Arthur E. Gill, and Mr. Brown expressed the hope that this practice of being represented at the growers' conventions would be continued in the future. Sherman L. Whipple, the Boston attorney, then delivered a carefully prepared address on the railroad situation in New England, praising President Mellen highly for his executive ability and foresight, but condemning him for a failure to appreciate fully the duties which public service corporations owe to the public. Mr. Whipple was followed by Col. Isaac M. Meekin, of North Carolina, who spoke eloquently and entertainingly on a variety of subjects. Charles E. Hatfield, chairman of the Republican State Committee, also spoke. The entertainment ended with a cabaret show. Following is a list of those present:

J. C. Abbott, W. G. Abbott, E. Abbott, A. Akeroyd, S. L. Ayres, F. G. Allen, C. F. Angell, S. G. Adams, C. Z. Adams, L. Baer, W. I. Bacon, L. Balch, E. W. Bennett, O. S. Bauer, J. H. Barnard, W. R. Bateman, S. Bartlett, C. W. Bigelow, S. W. Bridges, J. Brainard, E. Booth, John R. Bouldry of the Commercial Bulletin, F. M. Blanchard, E. B. Carlton, S. T. Carle, C. E. Cleveland, P. Clifford, J. A. Clapp, W. Clark, J. J. Collins, A. G. Cross, C. F. Cross, G. R. Colby, H. M. Cummings, S. S. Dale of the Textile World Record, P. Dewey, H. T. Dobson, W. C. Donald, C. W. Dow, J. T. Eddy, H. S Edwards, William Ellery, J. Eisemann, S. A. Eisemann, A. C. Emery, G. H. Ellis, W. A. English, J. L. Farrell, J. C. Faulkner, H. W. Flint, P. W. Flint, A. W. Follett, W J. Follett, J. W. Foster, A. L. Fowler of the Boston Transcript, L. Galle, Alpha Garth, F. N. Graves, S. W. Gifford, L. B. Harding, W. H. Harris, T. Hartley, F. W. Hallowell, Charles W. Hawkes of the Wool and Cotton Reporter, S. L. Hecht, E. E. Hills, K. Hutchins, A. W. Hilliard, L. G. Holden, F. W. Hobbs, E. L. Hills, E. Ireland, I. L. Jonas, L. Johnson, Vaughn Jealous, E. Y. Judd, J. A. Karnheim, C. H. Ketchum, R. Kleinjung, H. Kleinjung, A. Koshland, E. F. Leland, J. F. Legg, A. T. Levy, E. F. Lewis, H. B. Lewis, E. E. Leonard, C. W. Leonard, G. and H. Liebmann, H. Liebreich, A. Livingstone, James Lister, L. W. Lothrop, W. A. Mackie, D. T. Mc-

Carthy, J. McGuirk, W. D. McKellar, J. A. McDonald, W. M. Marston, F. A. Mason, J. A. Molineaux, J. F. Milner, J. Munn, C. Nichols, Edmund Noble of the Boston Herald, E. Y. Neill, C. B. Nunn, J. H. O'Brien, F. L. Orcutt, J. A. Paton, E. D. Paige, F. H. Paige, F. N. Perkins, E. W. Pride, William Price, O. N. Purdy, Jr., P. L. Reed, W. R. Reed, C. B. Rockwell, E. A. Robinson, G. W. Roope, M. Rosenthal, C. Ryder, T. Ryley, R. C. Sears, E. H. Sears, F. L. Smith, C. B. Smith, H. B. Shields, S. Sinsheimer, N. and M. Stevens, A. P. Spitz, R. L. Studley, C. A. Starley, J. S. Stressinger, A. H. Veasey and A. D. Veasey, C. A. Vinal, R. P. Water, S. Waters, M. G. Walsh, W. H. Walker, C. B. Weatherby, J. Wilcock, H. B. Williams, J. Wing, C. F. Willett, W. White, A. Wolstenholme, J. H. Worthington, William M. Wood, W. H. Wright, W. P. Wright.

DRAFTING IN THE "NOBLE" COMB

BY DUMVILLE

(In Report of Bradford Technical College)

To a practical man the manner in which the Noble comb performs the drafting operation is generally a matter of secondary interest compared with the knowledge of being able to make the necessary mechanical adjustments which may be necessary to remedy any defect which interferes with the production of a well combed top. There is, however, an immense advantage to be gained from a theoretical knowledge of all the parts of the machine, and the respective functions of each. The drafting calculations in connection with the Noble comb may be taken as a case in point as, usually, the giving of a reason why a certain effect is obtained is considered unimportant if the result turns out satisfactory.

The points concerned with the drafting of the sliver are:

1. The total elongation as between the combined total thickness of the slivers fed up and the thickness of the combed sliver delivered.

2. The slight surface lead between the small and large circle.

3. The drafting and combing by the outside drawing-off rollers.

4. The drafting between the outside and inside drawing-off rollers.

5. The slight elongation or lead between the inside drawing-off rollers and the coiler-can rollers.

Drafting may be defined here as the elongation or drawing-out of a sliver in such a way as to redistribute the fibers into a thinner arrangement by rollers or other mechanical means.

Drafting in an ordinary gill box is performed between two pairs of rollers with different but regular speeds, but in the Noble comb the drawing-out is done intermittently, each of the 72 slivers coming into contact with the outside drawing-off rollers in turn, and only at two places for each revolution of the large circle. Each sliver receives two draftings per revolution of the feed-rack, and, therefore, this intermittent treatment prevents fibers from all the slivers which are being fed-in being spread over the whole length of the combed top.

In any given length of drawn-out sliver, the drafted portion of each of the slivers being drafted only occupies a length equal to $72 \div 2$, or 1/36 part of the whole. Therefore the true drafting principle, which requires some of the fibers from all the ends being doubled together, to be spread out over the whole length of the resultant thread, is not complied with.

The fact that there are two drafting operations for each revolution of the large circle has no effect on the actual draft to which the material is subjected. This can easily be demonstrated, for, assuming that only one inner circle was running, instead of two, there would still be the same length of continuous sliver turned off. The drafting of the slivers would take place only once each revolution of the circle, but would still furnish an unbroken end. Neither does the presence of two inner circles, with their separate drawing-off rollers, affect the actual draft, they simply give to each rack-sliver a 1/18 instead of a 1/36 space in the combed top. They, however, furnish an overlap of slivers which makes for firmness, strength, regularity and better fiber arrangement of the top.

To consider the draft of a comb, according to the definition laid down, is simply to calculate, or measure, the length delivered by the inside drawing-off rollers in a given time and divide it by the length of sliver fed through the conductor-boxes during the same period. In other words, if 144 feet are delivered by the inside drawing-off roll-

ers, and the conductor-boxes have pushed forward a (4 1/4 ÷ 12) ft. length of material during the same period this would seem to suggest that (144 × 12) ÷ 4.25 = 406 was the draft of the comb.

This does represent the actual elongation of the fibers, and if the whole of the 72 slivers in the comb-racks could be taken as constituting a doubling process, the draft could be accurately stated as being 406. This, however, would not be a correct method of calculation, as the whole of the 72 slivers are not continually under the drafting process, and, therefore, other factors connected with the elongation must be allowed for.

The actual draft to which the material is subjected, is represented in the difference between the surface speed of the inside rollers and the surface speed of the large circle. This will be understood by assuming that, if the large circle was increased in size, with its revolutions remaining the same, there would be less drafting of the material as the difference between the surface speeds of the rollers and circle would be decreased; or, to state it the opposite way, if the circle was decreased in size and allowed to maintain the same rate of rotation, an increased drafting of the slivers would result, owing to a lesser amount of sliver being placed in contact with the drawing-off rollers, which would of course increase the elongation. The draft of the Noble comb rests, therefore, upon the relationship existing between the surface speed of the circle and drawing-off rollers, because an increase or decrease in the speed of the latter will increase or decrease the length of combed top sent forward to the coiler can.

The following calculations, which along with the measurements already referred to relate to a comb in active operation, will indicate how the actual draft may be ascertained, and also show the relationship between the various parts engaged in the combing process:

Calculation of surface speeds of large circle and outside drawing-off rollers, and draft between same:

Speed of shaft 500
Bevels, teeth ..... 16 and 32
Pillar shaft wheel 24
Bottom of rack shaft 60
Drum circle 10
Circle 264

(500 × 16 × 24 × 10) ÷ (32 × 60 × 264) = 3.78 revs. per minute.

3.78 × 43 ins. × (22 ÷ 7) = 514 surface inches per min.

Calculation of surface speed of outside rollers:

Speed of shaft 500
Bevels, teeth ..... 16 and 32
Bottom of vertical shaft 50
On roller shaft 48
Diameter of roller, inches 1¾

(500 × 16 × 50) ÷ (32 × 48) = 260.4 revs. per min.

260.4 × 1¾ × (22 ÷ 7) = 1430 surface inches per minute.

1430 ÷ 514 = 2.78, draft.

Calculation of surface speeds of small circle and inside drawing-off rollers and draft between same:

Speed of shaft 500
Bevel wheels, teeth ..... 16 and 32
Pillar shaft 24
Bottom of vertical shaft 60
On rack shaft 13
On inter shaft 16
Driving circle 12
Small circle 93

(500 × 16 × 24 × 13 × 12) ÷ (32 × 60 × 16 × 93) = 10.48 revs. per min.

10.48 × 16 × (22 ÷ 7) = 527 surface ins. per min.

Inside drawing-off rollers:

Speed of shaft 500
Bevels, teeth ..... 16 and 32
Vertical shaft-end 50
On roller shaft 38
Diameter of roller, ins. 1½

(500 × 16 × 50) ÷ (32 × 38) = 329 revs. per min.

329 revs × 1½ × (22 ÷ 7) = 1551 ins. per min.

1551 ÷ 527 = 2.94, draft.

Calculation showing difference between the surface speed of the outside and inside drawing-off rollers:

Surface speed of inside drawing-off rollers (as above) 1551 in. per min.

Surface speed of outside drawing-off rollers (as above) 1430 in. per min.

1551 ÷ 1430 = 1.084, draft.

This difference has an important effect on the conveyance of the fibers from the outside rollers to their point of union with the fibers being drawn from the small circle. By this means the fibers are kept more firmly in the center of the conveying leathers. For long smooth shafty fibers a longer draft is necessary at this part of the comb than is required for wools of a more clinging character.

Calculation of surface traverse of large and small circles:

Surface traverse of small circle .. 527 in. per min.
Surface traverse of large circle .. 514 in. per min.

527 ÷ 514 = a lead of 1.02.

This shows that the small circle has a slight

lead on the large one. This is designed to assist in the extraction of the shorter fibers from the inner rows of pins of the large circle, by giving the inner circle the firmer grip due to a diagonal pull instead of a radial one. An increased strain is put on the fibers by this leading relationship, but the combing benefit is very evident. The value of this arrangement will be understood by assuming the lead to be with the large circle.

Calculation showing the difference between the take-up of the coiler rollers and the delivery of the inside drawing-off rollers:

Delivery of inside drawing-off rollers, 1551 in. per min.

Uptake of Coiler Rollers.

Speed of shaft	500
Pulley on comb, inches	6
Pulley coiler	9
Stud wheel, teeth	26
Short cross shaft	24
Top upright shaft wheel	14
On roller end	21
Diameter coiler roller, inches	2½

(500 × 6 × 26 × 14 × 2½ inches × 22/7) ÷ (9 × 24 × 21) = 1891.2 in. per min.
Uptake of coiler rollers = 1891 inches.
Delivery of inside = 1551 inches.
1891 ÷ 1551 = 1.219, draft.

Summary:

Surface traverse of	In.	
Large circle	514	
Outside drawing-off rollers	1430	
Ratio of difference	—	2.780
Inside Drawing-off rollers	1551	
Outside drawing-off rollers	1430	
Ratio of difference	—	1.084
Small circle	527	
Inside drawing-off rollers	1551	
Ratio of difference	—	2.940
Large circle	514	
Small circle	527	
Ratio of difference	—	1.020
Coiler rollers	1891	
Inside rollers	1551	
Ratio of difference	—	1.219

The difference existing between the inside rollers and the small circle, into which the draft between the large circle and outside rollers is of course merged, may be taken to represent the actual draft of a comb geared to the foregoing dimensions, viz: 2.94.

This may be roughly confirmed by measuring the feet turned out by the inside rollers in one minute, and dividing it by the circumference of the large circle and its revolutions during the same period as follows:

Combed top delivered .....feet 144 4¼

Length of sliver fed in .....feet 12
Circumference of circle .....in. 136
(144 × 12) ÷ (136 × 4¼) = 2.99, draft.
which shows only 0.05th part of difference.

There is, however, the difference between the length delivered by the inside rollers and the calculated surface take-up of the coiler box rollers, which represents a draft of 1.219.

This may be attributed to the tension exerted in conveying the sliver to the coiler box, and to the slight variation which always exists between actual and calculated results.

AN IMITATION ASTRAKHAN FABRIC

A fabric to imitate astrakhan has recently been patented in the United States, the construction being shown in the accompanying illustrations. The filling consists of a compound thread which gives the fabric the appearance of astrakhan. This filling thread is made with a fine straight tension core around which a heavier thread is twisted in spiral form to produce kinks of irregular size. Fig. 1 is a side elevation of the compound-weft-cord before weaving; Fig. 2 is a view looking into the open warp-shed after the weft-cord has been picked into place from the shuttle; Fig. 3 is a view similar to Fig. 2, but showing the weft-cord beaten up, a new shed opened up, and a thin weft-thread picked into the new shed; Fig. 4 is a sectional view through the finished fabric along the weft and at right angles across the warp; Fig. 5 is a sectional view through the finished fabric along the warp and at right angles to the weft; Fig. 6 is a perspective view of the finished fabric.

The first step in the process is the production or procurement of the ornamental weft-cord illustrated in Fig. 1. This cord comprises a straight thin tension-core, 1, in the form of a thin tough thread of suitable fiber such as cotton or linen. About the said tension-core is interlocked a self-sustained series of kinks, 2, of a twisted ornamental yarn, preferably silk yarn.

The warp comprises a mat of thin spun threads of the ordinary character employed in weaving artificial astrakhan fabric. The warp is opened up into the shed, as shown in Fig. 2, so that the threads, a, of the outer layer, A, are spaced to approximate the average spacing of the kinks, 2, along the tension-core, 1, of the filling yarn. The inner or lower layer, B, of the warp-shed comprises the remainder of the warp. This layer, B, forms a compact mat beneath the filing and prevents the penetration of any part of the kinks of the ornamental yarn,

whereas the spaces between the threads, a, of the outer layer, A, are such as to permit the free passage of the major portion of each kink. The loom harness employed for raising the shed layer, A, may provide lateral play for the warp threads, a, so that they may more readily accommodate themselves

FIG. 1

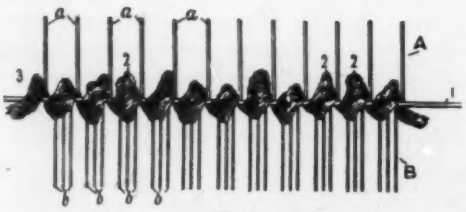


FIG. 2.

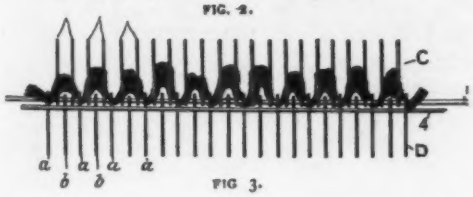


FIG 3.

FIG. 4.

FIG. 5.

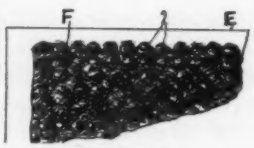


FIG. 6.

to the spaces between the kinks. The filling is picked through the shed shown in Fig. 2 with the tension-core, 1, supplying the necessary tension to straighten out the cord After the cord has been picked into its warp-shed, A B, a warp shed shown in Fig. 3 is formed so that each warp-thread, a, of the outer layer, A, of the shed shown in Fig. 2 now forms a part of the inner or lower layer, D, of the warp shed, C D, shown in Fig. 3.

THE CARDED WOOLEN MANUFACTURERS' ASSOCIATION

This organization held its annual meeting at the Murray Hill Hotel, New York, on January 16, the attendance being confined to the membership. The following officers were elected:

President—Edward Moir, Marcellus, N. Y.
Vice-Presidents—Gordon Dobson, Pittsfield, Me.; W. A. Dickey, Oella, Md.; Thomas Kitson, Stroudsburg, Pa.
Secretary—Arthur Wheelock, Uxbridge, Mass.
Treasurer—William Park, Stafford, Conn.
Board of Directors—H. J. Hamill, Germantown, Pa.; Robert Bleakie, Boston, Mass.; William C. Hunneman, Boston, Mass.; Ellis Jones, Newport, Me.; Frank Mehling, Cleveland; John Legg, Worcester, Mass.; A. I. Mitchell, Stafford Springs, Conn.; H. G. Niles, Jr., South Bend, Ind.

NATIONAL ASSOCIATION OF WOOL MANUFACTURERS

The annual meeting of this organization was held at Young's Hotel, Boston, on February 5, members of the association being the only ones in attendance. At the business meeting the following officers were elected for the coming year:

President—John P. Wood, Philadelphia.
Vice-Presidents—William M. Wood, Boston; Frederic S. Clark, North Billerica, Mass.; George H. Hodgson, Cleveland, O.
Secretary and Treasurer—Winthrop L. Marvin, Boston.
Executive Committee—Andrew Adie, Boston; Chester A. Braman, New York; Frederic C. Dumaine, Boston; Walter Erben, Philadelphia; Frederick C. Fletcher, Boston; Julius Forstmann, Passaic, N. J.; Henry A. Francis, Pittsfield, Mass.; Louis B. Goodall, Sanford, Me.; Edwin Farnham Greene, Boston; Joseph R. Grundy, Philadelphia; Franklin W. Hobbs, Boston; John Hopewell, Boston; Ferdinand Kuhn, Passaic, N. J.; George E. Kunhardt, Lawrence, Mass.; Charles W. Leonard, Boston; James R. MacColl, Pawtucket, R. I.; William Maxwell, Rockville, Conn.; J. F. Maynard, Utica, N. Y.; Joseph Metcalf, Holyoke, Mass.; Thomas Oakes, Bloomfield, N. J., and William H. Sweatt, Boston.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

THE MANUFACTURE OF TEXTILOSE

BY ROBERT DANTZER

[Translated from the French by the Editor of the Textile World Record.]

Artificial silk, which was first manufactured in 1885, is a type of artificial textile having a continuous and circular filament. The various artificial textile materials that have appeared since that time have consisted of short filaments which had to be spun in order to form a thread. Recently the idea was conceived of using a strip of paper for forming a thread, M. Claviez, of Altdanun, near Stettin, Germany, having been the first to put the process on an industrial basis. In the artificial process which is still followed, the paper is divided into strips by means of two series of water jets. These jets are arranged in pairs, each pair consisting of one above and one below the paper. Under the influence of the water the sheet is separated into strips which are wound on a cylinder. The sheet of paper is cut into a number of strips varying from one to five hundred, according to the size of the yarn required. In this condition the strips are flat and not suited for weaving. It is, therefore, necessary to convert them into the form of a thread and impart a certain degree of elasticity. This result is accomplished by twisting the paper tape. The strips, still damp, are twisted on a flier twister similar to that used for jute, but without the drawing rollers. The paper band, unwound from a vertical bobbin, passes between the delivery rolls and then to the flier which imparts the twist. The round thread thus obtained is wound on a bobbin in the ordinary manner. This class of yarn is called "xylodine".

The process invented by Kellner, Burk and Krown differs slightly from the preceding one. A sheet of paper is delivered to an endless apron in which are cut longitudinal grooves to form the bands, the size depending upon the distance between the grooves. In place of the endless apron metallic cylinders can be used in which are rows of perforations. When the water is partially expelled the paper adheres only to the perforated lines of the cylinder, thus forming a band that is delivered to an endless felt apron. When twisted the yarn is called "sylvaline". The yarn called "licella" is made in the same way.

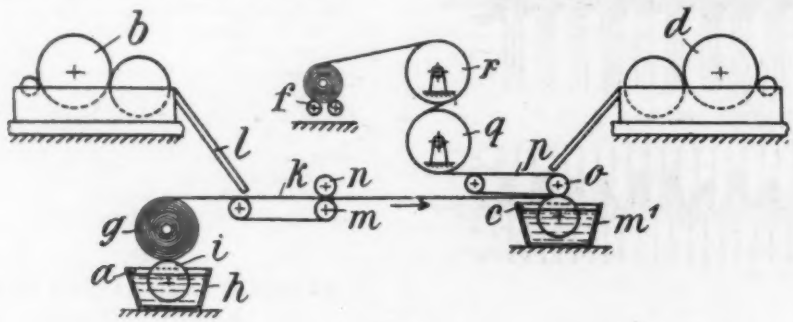


FIG. 1.

These various yarns are easily recognized because of their great density, the diameter of the thread being slightly less than that of a jute thread of the same count According to M. Dubese of Rouen, if the breaking strength of jute is indicated by 100 that of cotton of the same count will be equal to 135, while "sylvaline" will have a coefficient of only 55. This resistance drops as low as 35 when the "sylvaline" yarn is made from paper consisting of short fibers. In the wet state the paper yarn loses all resistance

to strength. In spite of the objections named these paper yarns have been used for certain purposes, such as stuffer threads in Moquette carpets. M. Motte of Roubaix, also manufactures matting from "sylvaline" twist. Owing to the deficiency in strength the use of these yarns has been very restricted. Various attempts have been made to strengthen the paper yarn by adding shoddy, wool waste, gelatine and viscose to the paper strip, but none of these methods has proved satisfactory. The core yarn

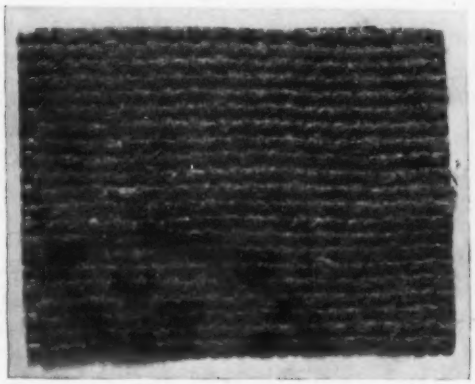


FIG. 2.

mentioned in recent issues of the Textile World Record is known as the urgoiti of Bilbao, Spain, but has not been used industrially owing to the high cost of production. M. E. Claviez, the inventor of paper yarn, has in recent years solved the problem. The new yarn which he has perfected is called "textilose" and was patented in France on July 2, 1910, French patent number 418,237.

Textilose is a paper thread reinforced by a core of textile fibers, thus forming what is really a core yarn. The paper used, of which the composition is secret, is very uniform and strong. This paper is unwound from a roll and covered on one or both sides with a thin layer of some textile fiber. In the latter case a different material may be used for each side of the paper. As textile fibers would not adhere of themselves to ordinary paper, it is necessary either to dampen the paper or coat it with an adhesive preparation of some kind. The machine used humidifies the paper and covers either one or both sides with the fibrous material.

Fig. 1 shows the machine used by M. Claviez. The roll of paper, g, of the desired width in the form delivered from the paper mill, is set on a humidifying apparatus, a, consisting of a tank, h, in which a rubber roll, i, revolves. This rubber roll is immersed in the water and thus dampens the rolls of paper with which it is constantly in contact, the roll, g, being weighted to give the desired pressure. The tank is filled either with water or an adhesive liquid. After being dampened or coated with the adhesive material, the paper passes over an endless apron, k, in the direction indicated by the arrow. The web of fibrous material coming from the card, b, is delivered to the paper by means of the incline, l. After the textile web reaches the face of the paper the two are compressed by the press rollers, m and n. As a result the fibers are pressed in a very thin layer on the surface of the paper. Another moistening apparatus, c, consisting of a vat, m^1, and a roller, o, serves to moisten or coat the other side of the paper. The sheet then passes over the endless

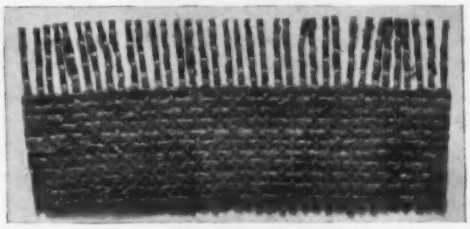


FIG. 3.

apron, p, where it receives a second coating of fibers delivered from the second card, d. Thus covered on both sides with a fibrous material the paper passes over the drying cylinders, g and r, and then is wound on a roll by the apparatus, f. It is evident that when the paper is coated only on one side the second card and moistening apparatus are omitted.

The apparatus described above is used only when the paper is dry. If the paper is delivered in a damp state to the machine, the operation can be simplified. In the latter

case the moistening apparatus is omitted and the fibrous material coming from the cards is delivered directly to the paper. Moisture in the paper causes the fibers to adhere to it. After being coated with the fibers the sheet is cut into strips, the width of each varying according to the size of the yarn desired. The simplest method consists in passing the paper between two paraallel shafts carrying conical discs. The distance between the discs corresponds with the desired width of the strip. These strips are then wound on spools from which the material is delivered to the twister. The twisting operation is the same as that already described for "sylvaline," the jute twister being used without the drawing rolls. Ordinarily the textilose yarn contains 10 per cent. of cotton waste such as cotton fly or the waste from napping machines.

Figs. 2, 3 and 4 show three samples of textilose such as is used for sacks. The fabric at Fig. 2 is used for cement bags and weighs 8.3 ounces per square yard. There

FIG 4.

are 25 threads per inch in the warp and 10 picks per inch in the filling. This fabric is slightly calendered after weaving in order to make it opaque and it possesses a high degree of strength. Tests with samples 2 inches wide and 8 inches between the jaws of the machine gave the following results:

Warp: resistance, 169 lbs.
Elongation, 12 1/2 per cent.
Filling: resistance, 109 lbs.
Elongation, 33 per cent.

The "Manufacture francaise de textilose," which operates under the Claviez patents, has patented a special textilose fabric for sacks to hold flour and other finely pulverized materials.

Fig. 5 shows a still different textilose fabric. Between the ordinary warp threads are placed flat strips of paper, a, which are untwisted. These flat untwisted strips fill the open spaces in the fabric without appreciably increasing the weight. The textilose yarn is flexible, elastic and very strong and

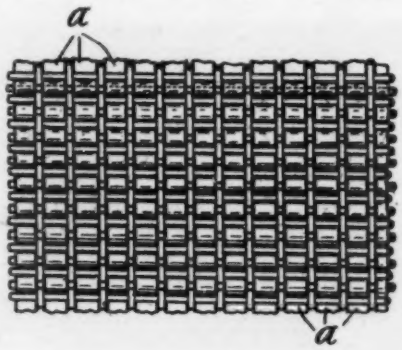


FIG. 5.

does not present any special difficulty in weaving. Although its uses are limited, still it excells all other materials for the manufacture of sacks. Jute sacks which have been extensively used heretofore disintegrate easily and emit a disagreeable odor, while textilose sacks of the same price possess a much greater strength.

For transporting chemical products such as phosphates, nitrates, etc., textilose is unexcelled, as it is not affected so easily by acids. As textilose is less hygroscopic than ordinary textile materials it is well suited for sacks holding cement, lime, plaster, sea salt, etc.

Textilose fabrics can be washed, bleached and colored. The material can be colored with the acid, basic, direct and sulphur dyes. The dyeing should be done, if possible, in cold, concentrated baths, the process being completed as quickly as possible. Care should be taken in drying not to stretch the fabric, otherwise the interior of the material which is not dyed as deep a shade will be

exposed. For this reason the acid or sulphur dyes are to be preferred. The dyed yarns can be used in the manufacture of carpets and upholstery materials. Textilose fabrics are easily printed and can be used for upholstery or curtains. The manufacture of textilose is expanding rapidly. At the present time there are textilose mills in Germany, Austria, Belgium, Italy, France and the United States. A textilose mill is about to be started in England and others are under construction in Spain and Brazil.

THE HANDLING OF THE COTTON CROP

BY THOMAS NELSON

In the gathering of the cotton crop hand labor is still employed and according to many who are familiar with the subject this labor will never be supplanted. This method of gathering the cotton crop on the large plantations must, however, be supplanted by mechanical means if the cotton growing industry is to keep progress with other developments and with the requirements of the world. On these large plantations machines are being tried out for picking the cotton. Even though the cotton picked by machines may not be quite as free from leaf and dirt, still the saving in this line is very large. In the amount of cotton picked there can be no comparison made, as the amount gathered by machines is so much in excess of that gathered by hand.

It is, however, after the cotton has been picked that the method of handling the cotton crop is especially deficient. Anyone at all familiar with the American cotton bale knows of its raggy and unkempt appearance which is a disgrace not only to the producer, but to the country as a whole. The methods as used today in handling the crop are the same that were used fifty years ago. In handling the cotton, the cotton is first picked and then carried to the ginnery where it is ginned and baled into the regular square bale. This bale is then sold to the buyers who buy it either for domestic use or for export. If for export the bales are shipped to some port, via some compress and concentration point. At this point the large square bales are compressed by hydraulic presses into the smaller bale for export or for some eastern point. A visit to one of these compresses will show that the large square bales as received from the producer will vary from 54 inches to 72 inches in length. This is one of the causes of so much damage to export cotton. Every gin box should be the same size so that every square bale when sent to the compress will be of the same size. These large bales when being compressed are too wide and too long for the jaws of the press, hence it is impossible to make a good compressed bale, the sides and ends bulging out and leaving a ragged looking bale. This defect will be eliminated if the steamship companies will insist upon the rules and regulations as passed by them recently requiring that all bales have a density of 22 1/2 pounds per cubit feet.

One of the main sources of loss to the farmer is country damage, for which the farmer himself is responsible. The farmer will take his cotton to the ginnery to be ginned and baled and will in many cases take it back to the farm before selling it. Instead of putting his cotton under cover he leaves it exposed to all kinds of weather. Some farmers believe that by having the cotton wet, through this exposure to the elements, they will gain so much in weight. This, however, is a fallacy as in many cases the cotton is lighter after being dried out by the sun than it was before being wet with the rain. In addition to this, the cotton has been stained even though many farmers claim that rain will not damage the cotton. The cotton while exposed to the weather must be turned frequently so that the sun can absorb the water and dry out the cotton. If, however, the farmer should forget to turn the cotton, the water which has been allowed to stay in the cotton will rot the cotton. In one case of country damage which came to the writer's notice a farmer lost $81.69 on 33 bales. In another case where the farmer had exposed his whole crop the damage resulting to this crop amounted to $2,056.23.

The claim of the farmer that cotton when rained upon will not be damaged if the cotton is turned so as to be dried out by the sun, is a mistaken idea and causes damage to the cotton because the cotton is stained

to a certain extent. The loss which accrues to the farmer from this source cannot be estimated, but it should be remembered that the buyer buys the whole bale on the poorest sample in the bale, hence if only a very small proportion of the cotton is stained a very considerable reduction is made. Another loss to the farmer is in the method of ginning. Since the advent of the public ginneries proper care is not exercised in the ginning of cotton. The more cotton that is ginned the more profit will the public ginnery make, hence the character of ginning is neglected. The seed cotton is fed to the machine and the box frequently becomes choked-up so that the saws plow through the mass and cut the fibers.

In many cases also the saws are not kept in good condition and the result is that the fibers are cut. Another loss to the farmer is when the farmer takes a good grade of cotton to be ginned and it is ginned immediately after a poor grade of cotton. If the gin has not been very thoroughly cleaned, some of this poor grade of cotton will be mixed with the good grade. Again it must be remembered that if only a very small amount of poor grade or short fibers are mixed with the better grade or long fibers, and the buyer should happen to get in the sample a little of this poor grade cotton the price paid for the bale would be fixed on the poorest stock in the sample. Another loss which occurs to the farmer is in the sampling which takes place in order to obtain the grade of the cotton. These samples when accumulated are known as the city crop, which in the course of the season is very large.

A considerable amount of old and reworked bagging is used to cover the bales. The farmer believes that by using this old and cheap bagging and selling his bale of cotton at gross weight, he is getting paid the price of cotton for his old bagging and ties. This is a mistake as the price of cotton is fixed with this in mind. It does not seem at all reasonable that a business man will pay something for nothing. In other words, it cannot be expected that the buyer will pay the farmer, say $2.20 for bagging and ties, when the farmer pays only 85 cents to $1.00 for the same material. The farmer being the seller ought by all the laws of business to cover his cotton so that it will present a good appearance, be well protected and at the same time command a higher price. The mills are responsible to a certain extent for this use of old bagging, since after the cotton has been stripped at the mills the bagging is resold. If the condition of the bagging is such that it cannot be used again it is reworked and made into second-hand bagging. This second-hand or reworked bagging does not afford proper protection to the cotton. Another objection to the use of this old bagging is the increase in the fire hazard. The cotton not being properly covered is subjected at all times to fire and the loose condition of the cotton is a help to this result rather than a hindrance. If the cotton could be compressed to a greater density and completely covered the fire hazard would be considerably reduced.

PROCESS FOR INCREASING PRESS LUSTER

A process has recently been patented in Germany by which it is claimed the luster obtained in pressing textile goods is greatly increased. Heretofore iron or steel plates were used for the presses, the cloth being placed between these plates after press paper had been laid between each fold. By the new process aluminum is substituted for the iron or steel. The press papers are dispensed with as aluminum does not adhere to the cloth.

The cloth is placed in a chamber into which hot air is introduced. The goods when placed in the heating chamber have 18 per cent. of humidity. As a result of the rapid transmission of the heat through the aluminum plates and the extraordinary high specific heat of aluminum the moisture in the goods is quickly converted into vapor which acts on the cloth as in the case of the decatizing process. The result is a very high luster which cannot be obtained by methods heretofore in use.—Oesterreichs Wollen & Leinen Industrie.

A HAND BOOK OF WEAVES

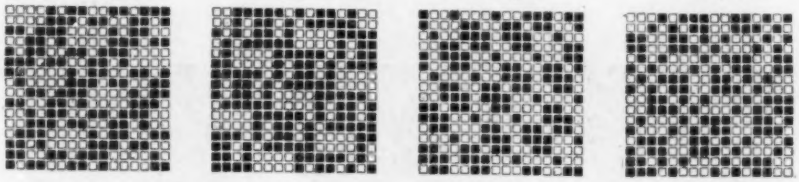
By G. H. Oelsner, Director of the Weaving School at Werdau.

Translated and Revised by Samuel S. Dale

This Series began in July, 1911

Fig. 950 ..... 15 x 15 5-leaf satin
Fig. 951 ..... 15 x 15 5-leaf satin
Fig. 957 ..... 15 x 15 15-leaf satin
Fig. 958 ..... 15 x 15 5-leaf satin
Fig. 959 ..... 15 x 15 5-leaf satin
Fig. 960 ..... 15 x 15 5-leaf satin
Fig. 961 ..... 8 x 6 8-leaf satin
Fig. 962 ..... 16 x 16 16-leaf satin

FIG. 965. FIG. 966. FIG. 967. FIG. 968.



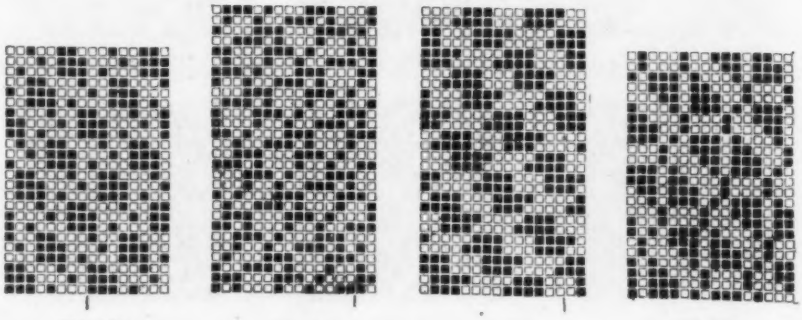
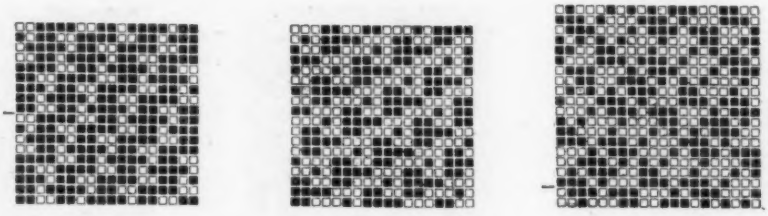


FIG. 972. FIG. 973. FIG. 974. FIG. 975.

FIG. 976. FIG. 977 FIG. 978.



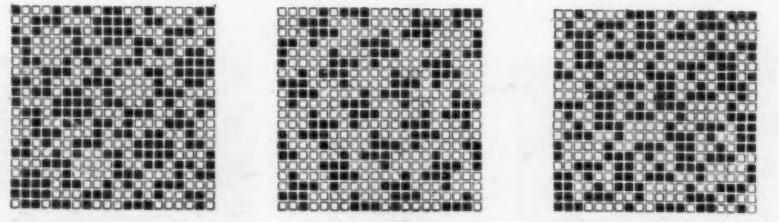


FIG. 979. FIG. 980. FIG. 981.

Fig. 952 ..... 15 x 15 5-leaf satin
Fig. 953 ..... 15 x 15 5-leaf satin
Fig. 954 ..... 15 x 15 5-leaf satin
Fig. 955 ..... 15 x 15 15-leaf satin
Fig. 956 ..... 10 x 15 5-leaf satin
Fig. 963 ..... 16 x 16 8-leaf satin
Fig. 964 ..... 16 x 16 8-leaf satin
Fig. 965 ..... 16 x 16 8-leaf satin
Fig. 966 ..... 16 x 16 8-leaf satin
Fig. 967 ..... 16 x 16 8-leaf satin

(Copyright, 1913, by Samuel S. Dale.)

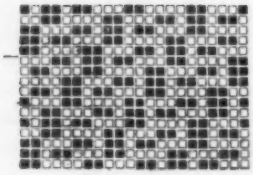


FIG. 969.

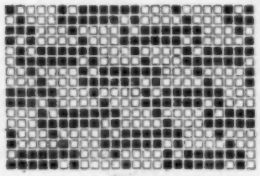


FIG. 970.

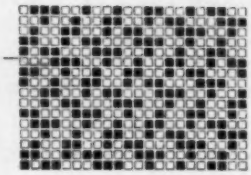


FIG. 971.

FIG. 982.

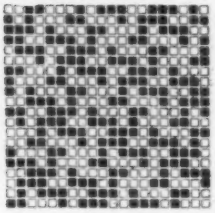


FIG. 983.

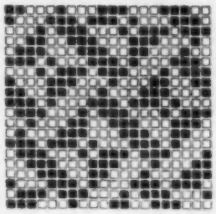
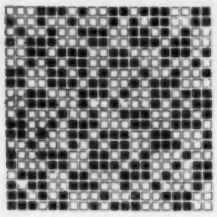


FIG. 984.



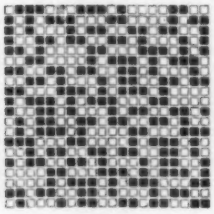


FIG. 985.

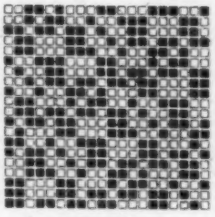


FIG. 986.

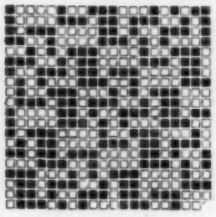
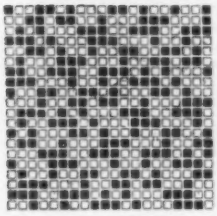


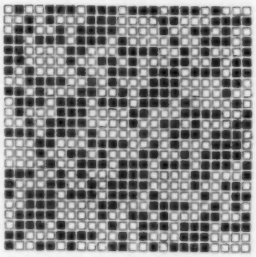
FIG. 987.

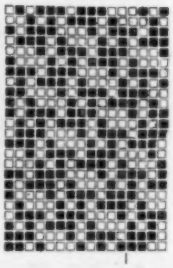
FIG. 988.

FIG. 989.

FIG. 990.







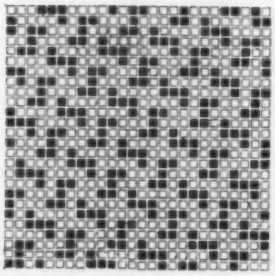


FIG. 991.

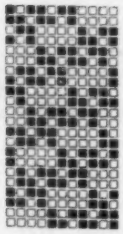


FIG. 992.

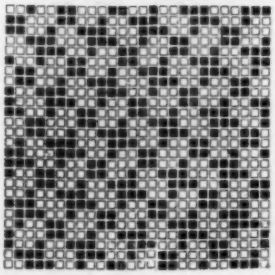


FIG. 993.

Fig. 968 ..... 16 x 16 8-leaf satin
Fig. 969 ..... 22 x 11 11-leaf satin
Fig. 970 ..... 16 x 16 8-leaf satin
Fig. 971 ..... 22 x 11 11-leaf satin

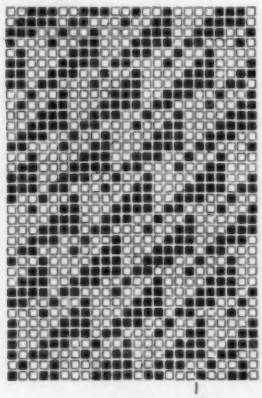


FIG. 994.

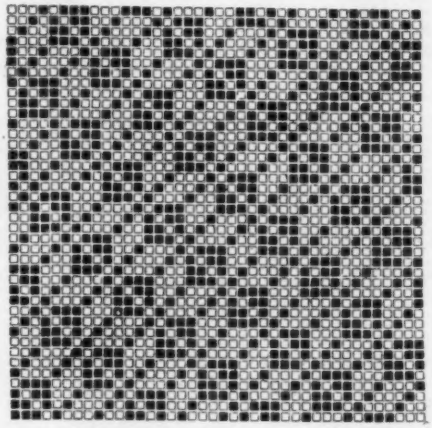


FIG. 995.

Fig. 972 ..... 8 x 24 8-leaf satin
Fig. 973 ..... 14 x 28 14-leaf satin
Fig. 974 ..... 14 x 28 14-leaf satin
Fig. 975 ..... 16 x 24 8-leaf satin
Fig. 976 ..... 18 x 9 9-leaf satin
Fig. 977 ..... 18 x 18 18-leaf satin
Fig. 978 ..... 22 x 20 5-leaf satin
Fig. 979 ..... 20 x 20 5-leaf satin
Fig. 980 ..... 20 x 20 10-leaf satin
Fig. 981 ..... 20 x 20 10-leaf satin
Fig. 982 ..... 20 x 20 10-leaf satin
Fig. 983 ..... 20 x 20 5-leaf satin
Fig. 984 ..... 20 x 20 5-leaf satin
Fig. 985 ..... 20 x 20 5-leaf satin
Fig. 986 ..... 20 x 20 5-leaf satin
Fig. 987 ..... 20 x 20 5-leaf satin
Fig. 988 ..... 20 x 20 5-leaf satin
Fig. 989 ..... 24 x 24 8-leaf satin
Fig. 990 ..... 12 x 24
Fig. 991 ..... 26 x 26 26-leaf satin
Fig. 992 ..... 11 x 22
Fig. 993 ..... 26 x 26 26-leaf satin
Fig. 994 ..... 18 x 36
Fig. 995 ..... 40 x 40
Fig. 996 ..... 16 x 64

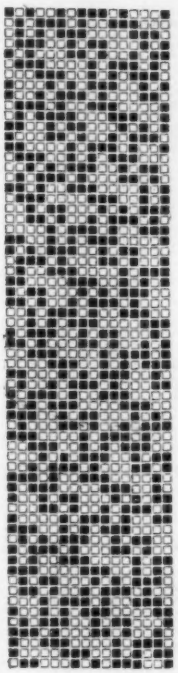


FIG. 996.

CREPE BY TRANSPOSITION OF WEAVES IN CHECKERBOARD ORDER

If an 8-leaf crepe is wanted, the distance on the drafting paper in each direction is divided into two equal parts, which divides the entire area into four equal parts. A balanced weave is then drafted in the lower left-hand square, the diagonally opposite corners of the square being made alike, Fig. 997. In the adjacent or lower-right hand square a weave is drafted, similar to that in

the first square, risers being inserted for the sinkers and the first thread corresponding to the last thread of the weave on the first square, Fig. 998. The weave is completed by making the upper right-hand square like the lower left-hand; and the upper left-hand square like the lower right-hand square, Fig. 999. In this way many useful weaves can be formed, of which examples are shown at Figs. 1000 to 1027.

FIG. 997.

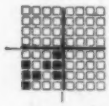


FIG. 998.

FIG. 999.

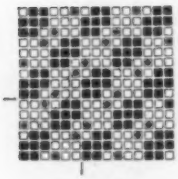


FIG. 1000.

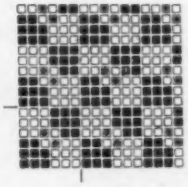


FIG. 1001.

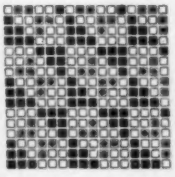


FIG. 1002.

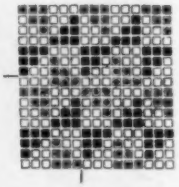


FIG. 1003.

FIG. 1004.

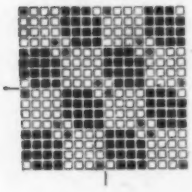


FIG. 1005.

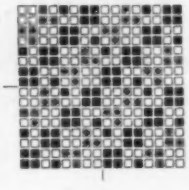


FIG. 1006.

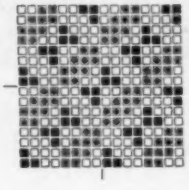
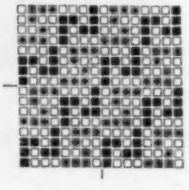


FIG. 1007.



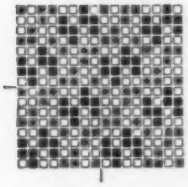


FIG. 1008.

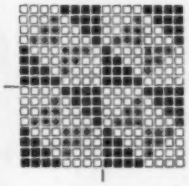


FIG. 1009.

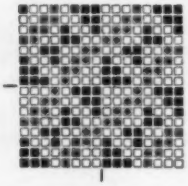


FIG. 1010.

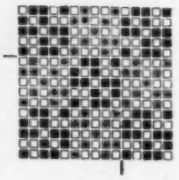


FIG. 1011.

FIG. 1012.

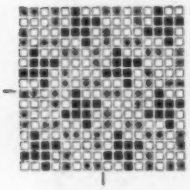


FIG. 1013

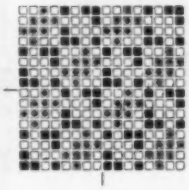


FIG. 1014.

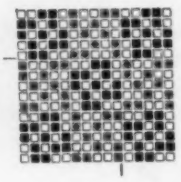
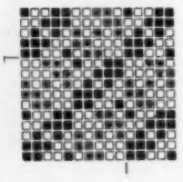


FIG. 1015.



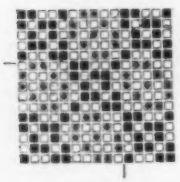


FIG. 1016.

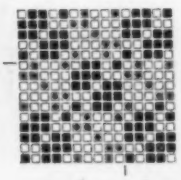


FIG. 1017.

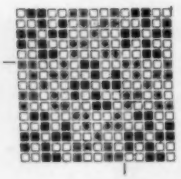


FIG. 1018.

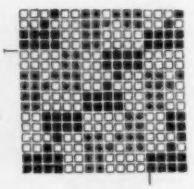


FIG. 1019.

ENGLISH NOTES

By Our Regular Correspondent

The insuperable objection of British textile operatives to paying more for their food has at length led to the dropping of food taxes out of the program of the political party hitherto identified with the twin causes of colonial preference and tariff reform. In future less is to be heard of a tariff on wheat and more of a tariff on manufactured goods and it seems to be taken for granted by London Conservatives that this rearrangement will reconcile textile England to the protective system. The change evokes no jubilation in trade—as distant from political—circles and a British protective tariff is still a long way off. Few textile manufacturers stand to gain anything appreciable from the mere exclusion of competing foreign goods from the home market, for the total volume is small. A tariff can be useful to them principally by improving the status of the domestic consumer and enabling him to buy more or better goods; or otherwise by raising the rate of profit on domestic sales. So very large a part of the production of textiles is for foreign sale entirely that the number of manufacturers whose pockets are touched by these opportunities is probably not more than half of the whole. The remainder have nothing to counterpoise their invincible objection to laws that make production more expensive.

FIG. 1020. FIG. 1021. FIG 1022 FIG. 1023.

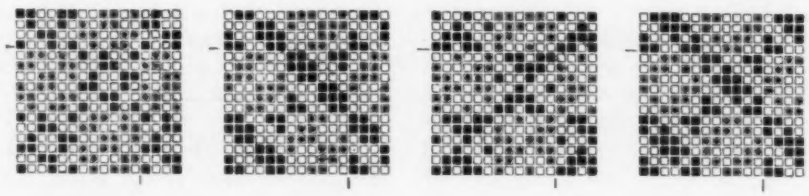
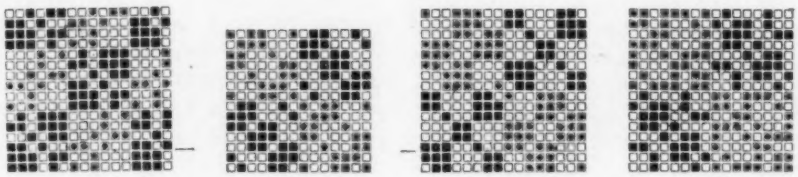


FIG. 1024. FIG. 1025. FIG. 1026. FIG. 1027.



American tariff revision continues to be discussed in the wool trade and would be discussed with more point were there any firm knowledge of what is to happen. The trade is divided into sections each with interests of its own and the question is not simply one of fabrics. The wool merchant, waste merchant, top maker and worsted spinner view the question as it affects them individually and irrespective of any other class. They are divided further according to the particular grades of material—English, botany or crossbred—with which they treat. Thus, apart from any natural division of mankind into the sanguine and the pessimistic, there is room for plenty of different shades of opinion and for some conflicting hopes. There is a disposition to refer to the days of the Wilson tariff for guidance in forming new expectations and the reference to experience encourages belief that there are specialties in tops and yarns with which Bradford may be able to supply American manufacturers to advantage. In respect of fabrics it is seen clearly that a flat rate of ad valorem duty on all fabrics of wool alike will be more of an obstacle to the import of high-priced than of cheap goods. As nobody knows what is to be done and as everybody has had cautions in the past against the forming of extravagant anticipation, all opinions are tentatively held. The one sure rock to which minds cling is that anything which

cheapens wool in America will promote its consumption and lead to enlarged demands and these acting directly and indirectly will produce their effect on prices here. The prospect is a bull point in considering future values.

* * *

The strike that has laid the Yorkshire works of the Bradford Dyers' Association idle arises not out of wages, but out of questions of piecework and the manning of machines. For a dozen years the collective agreement between the three trade unions and the Association has preserved the peace. The bargain has served the Association well and it has been the making of the unions. Now that the unions are strong in number and in funds comes a trial of strength. The Lancashire works of the Association are organized by piecework and even some of its Yorkshire dye houses. The arrangements in these places are quite to the satisfaction of the union men employed, but the men have money in hand and are unlikely to work until the bank balance has been materially reduced. It is long since they had a strike and natural pugnacity explains better than anything this latest exhibition of "labor unrest." The wages they asked are proffered to them with safeguards against undue physical strain, committees for fixing rates and compensation for men disemployed. None of these good things appeals to the mass in its present state of mind or seems likely to do until a little blood has been let.

* * *

Sir William Mather in introducing the scheme for irrigating three or four million acres in the Sudan left a hint that the supply of labor was a weak point. Mr. Arno Schmidt on return from the Gezira plain has also to admit that the land is not ready-peopled. There are cultivators visible for another 10,000 acre farm and a number of boys and girls who are expected to provide a larger adult population within a few years. Population commonly does grow in the face of prosperity, but meantime progress must evidently be limited. At present the land is watered by a seventy-foot pump lift and defects of transport stand in the way, but these obstacles are remediable by engineering. The 1,800 Government farm at Tayiba, although returning a higher yield of cotton than the average in Lower Egypt, does not pay expenses, reputedly because of its small size. Two or three 20,000-acre farms are to be tried experimentally, given financial assistance from the British Government, and they are to give a basis for reckoning costs and weighing results. At best it will take a considerable time to obtain a large weight of cotton from the Sudan and at worst unexpected difficulties may appear. There is a warning against exuberance of optimism in the flat record of the British Cotton Growing Association and doubtless $15,000,000 of Government money is enough to spend before proceeding with the complete scheme of irrigation canals.

* * *

There is still an unsatisfied demand for a perfect wool pack at the price of the highly imperfect bags which load the contents with loose jute fibers. The vegetable fiber, in refusing the color, appears as a whitish streak on the face of dyed worsted and has to be removed at great pains and expense. The packs are even superfluously imperfect for some of them are striped with colored threads and some packers in an excess of zeal sew up their bales with dyed string. Granting that the wool is wanted for dyed goods the dyeing of the jute or twine may be of advantage, but how does the grower or packer know whether the cloth is to be bleached or dyed? Whites have been in favor and a spinner tells how he was called in to inspect fifteen pieces woven from his yarn. They showed blue spots of quarter-inch diameter and inside each was a single colored thread from which the blue had bled. The colored fibers microscopically examined proved to be jute and the burling and refinishing of the pieces cost $75. In short the Australian wool pack, as manufactured by Calcutta, is wrong when dyed and wrong when undyed and nothing substantial has yet come out of the discussion of its defects and the qualities of possible substitutes.

It is of jute in wool that most is heard, but the silk spinner finds cotton in silk waste no less grievous. Reelers and throwsters use cotton ties for their hanks in place of the

cheap silk yarns procurable for the purpose and the result is seen in a steady stream of claims from the users of the yarn. Cotton fiber refuses silk dye just as jute resists wool dye and spinners, in despair of ever making producers of waste learn consideration, inquire anxiously why silk dyers cannot use dyestuffs that will color cotton. Were the packing of wool and the reeling of silk in the same set of hands as the production of piece goods there is not a question of what would be done. Neither the jute nor the cotton nuisance would be heard of again.

* * *

An excitable Nottingham man publishes a new charge against American lace manufacturers in accusing them of bribing public designers to supply them simultaneously with the new designs executed for local firms. Mr. Stiebel breathes of prosecutions and of "the vilest and foulest pieces of corruption that could possibly be committed." The story is not thoroughly plausible at first sight unless it can be supposed that Americans are foolish enough to pay more for designs others are using than they need pay to have their own pick along with exclusive rights. It is true that Nottingham designers are not very well paid for their labor and at times most public designers have suffered shabby treatment at the hands of manufacturers in whom they have reposed faith. As they have to live principally out of their own market and as their characters are not notoriously worse than that of Nottingham lace merchants and manufacturers, it may be tentatively supposed that the instances of corruption are rare. The charge is made against "American and Continental competition," but it is the designer more than anyone who suffers from such words and he has the least right to demand either proof or retraction.

* * *

A rearrangement of hours is being tried in one or two Bradford weaving sheds where the shortage of hands is felt. Work begins at 8 instead of 6 in the morning and continues till 5.45 with three-quarters of an hour off for dinner. The scheme is on its trial and if the expectations are fulfilled the saving in gas and fuel with the avoidance of lost time in stopping and starting at breakfast time will more than pay for the slight curtailment of hours and the small compensatory advance to weavers. It may not be entirely the six o'clock start that causes girls to seek work at two dollars a week in shops when they could have four dollars at the loom, but early rising is one factor in the case. A similar preference is shown where the disparity in pay is much greater and this seems to show that the disfavor in which mill employment is held is almost regardless of wages. Elaborate schemes of welfare work have met with no more than dubious success in the few cases in which they have been tried and the available experience suggests that no one means acts as a sovereign remedy for the shortage of help. As between mill and mill and district and district the position varies considerably.

* * *

If etymology may be allowed to govern the use of terms, the word "textiles" will be reserved for goods woven or capable of being woven. Seemingly it is needful to point out that the name is derived from the Latin verb "texo," to weave, for two chemists—one of them principal of an eminent textile college—apply the description to felt hats. They have less excuse than a Cockney who gave the same name to boots and they incur some risk of leading a careless public to suppose that mercury is a regular ingredient of woven goods. Dr. Lloyd and Professor Gardner were concerned purely with the use of mercuric nitrate to "carrot," or raise the outer scales, of rabbit fur and they showed that a small percentage of the mercury thus used may pass through all processes of manufacture and be found present in hats that have been worn a year. Cases of poisoning by this mineral occur among hat workers and these justify a research. Acid is used to felt furs. Wool felts in the presence of alkali, but furs are treated with jets of hot water and sulphuric acid and are kneaded in dilute acid afterwards.

* * *

"The Cotton Manufacture of Dacca," a little book by "A Former Resident," pub-

lished in 1851, is worth the attention of compilers of textile libraries, partly because of the light it sheds on some familiar textile names. Our nainsook was the Bengali "nyansook" made 54 inches wide with 2,200-2,700 ends in the warp. The baft that is sold chiefly dyed blue to primitive people at most ends of the earth is the Persian "bafta," which word means "woven." The dhooties of which North-east Lancashire makes millions a year for Hindu wear are loin-cloths for males, striped near the list, and the name comes from "dhona" (to wash), a reminder that these goods are washed daily at bathing time. Mulls rather obviously owe their name to the Bengali "mulmul" or muslin; "mulmul khas" was muslin for a king, or very fine muslin, as are the goods called mulls in the trade today. Tanjibs were formerly "tunzebs" from the Persian "tun," the body, "zeb" an ornament. Our dorias or doria stripes were "dooreea" muslins in which the warp stripes were made with two-fold yarn.

THE MANUFACTURE OF COTTON CREPE

BY GLAMORGAN

The cotton crepe shown in the accompanying illustrations is a crimp fabric which is selling remarkably well in both England and America. In appearance the cloth resembles the crimp fabrics of twenty years ago, but with this important difference that the crinkles in the latter fabrics ran crosswise of the piece, while in the new crepe the crinkles run lengthways of the fabric. The crinkled appearance, which is the principal feature of the new crepe, comes periodically into public favor. In the old crimps, the crinkled appearance was obtained by weaving the warp from two beams, one of the warps being held very tight, while the other was woven very slack, which inevitably produced a crinkled appearance in the cloth. In the better qualities especially, this effect was often broken up by figured stripes running warp way, and some very pretty combinations were obtained. A cheaper method of

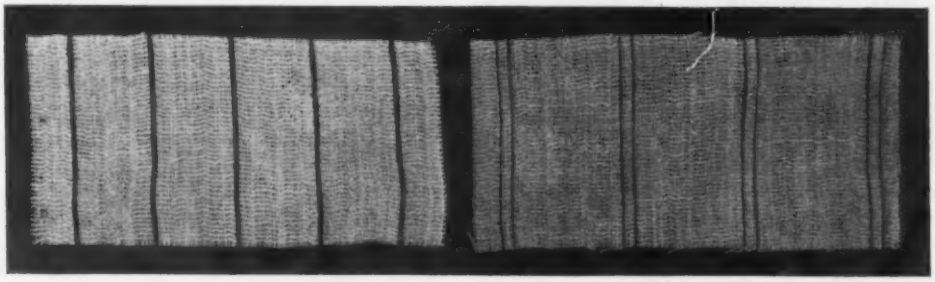


FIG 1.

FIG. 2.

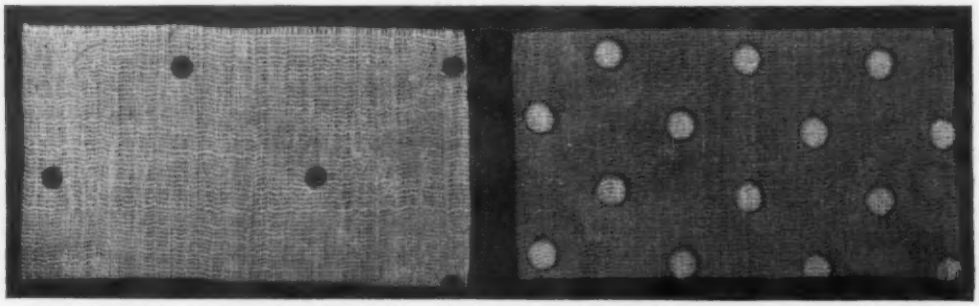


FIG 3.

FIG. 4.

obtaining the same effect was afterwards adopted, in which the shrinking effect on cotton under the influence of caustic soda was made use of. A solution of caustic soda was printed on the prepared fabric, this method of application permitting diagonals and spot effects to be obtained with the

FIG. 5.

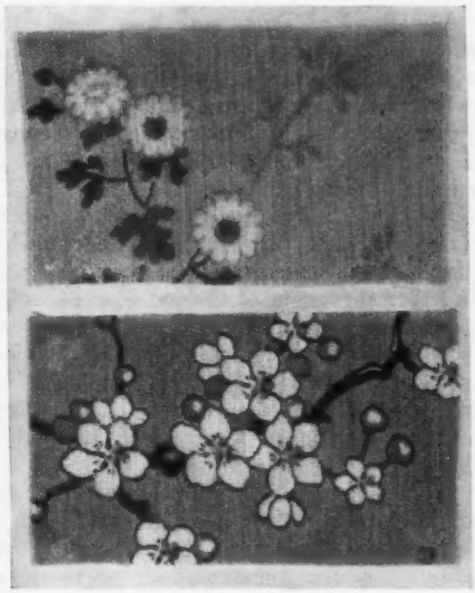


FIG 6.

greatest ease, whereas by the older method the effects were generally either in stripe form or all over effects.

In the new crepe the crimpy effect is obtained by using very hard twisted filling, which produces decided waves or crinkles running in the direction of the warp. The warp is of ordinary twist and is woven in an ordinary calico loom, the weave being plain throughout. An important feature to notice is the preponderance of warp ends over the picks of filling, there being in the finished cloth, roughly, two warp threads for every pick of filling. This is done with the object of allowing the hard twisted filling full opportunity to exercise its natural tendency to curl, with the result as noted above.

A satisfactory make for this cloth is 76 ends per inch of about 40s, with 38 picks per inch of 20s or 22s very hard twisted filling. The warp has the usual number of turns per inch, while the filling has about 26 turns per inch, twisted in the same direction as the warp threads. In order to give a finished cloth 30 1/2 inches wide, the reed width in the loom should be 43 1/4 inches, the abnormal shrinkage being accounted for by the exceptional curliness of the weft. The warp should have 2340 ends with 6 double ends at each side for selvage, to be woven in a reed with 27 dents per inch, entered 2 ends in a dent. The warp is held as tight as possible consistent with good weaving, thus compelling the filling to bend around

FIG. 7.

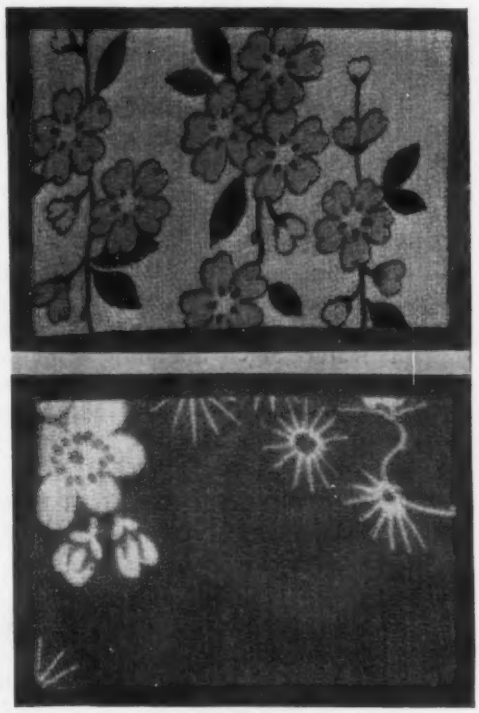


FIG 8

the warp threads and heighten the desired effect. The fabric is retailed in the English shops at 21 cents per yard, the illustrations showing some of the best selling patterns. The cloth is woven grey and then bleached or dyed in the piece, the shades ranging from white and cream, light pink, slate, fawn, sky, and helio, to the darker shades of brown, green, rose, dark sky, peacock, mauve and dark blue. In the ornamental patterns all the designs are printed on the

fabric, and include simple stripes running lengthways of the piece as shown in Figs. 1 and 2, also spot effects as shown by Figs. 3 and 4, some showing dark spots on white, cream and light colored grounds, while others show white spots on darker grounds. The patterns in greatest favor, however, are conventional floral forms as indicated by Figs. 5 to 8, though these by no means exhaust the different designs which are being printed on the cloth, some very attractive Oriental or Japanese types of designs being produced which are well suited to the clinging nature of the material.

The illustrations only give an imperfect idea of the beauty of some of these designs, as many as 12 different colors being employed in some of them, the blending of the colors producing some really excellent results. In others the color scheme is less ambitious, three, four and five colors only being used, but in most cases in a very tasteful manner. Other patterns are obtained by printing all the ornament in a single color on a white ground, or by having a white figure on a colored ground. The colors are all fast to washing and light, while another very desirable feature about the fabric is the fact that after washing, the garment does not need ironing, while the crimpy appearance of the material is, if anything, improved.

A METHOD OF DEFINING TWIST IN YARN

BY PROF. ALDRED F. BARKER

(In Report of Bradford Technical College)

The following notes are not set forth as in any sense definitely dealing with the principles involved in twisting yarns. They rather take the form of a suggestive inquiry, and their value can only be decided by the application of the formula arrived at during some weeks or months in the factory. If those who are interested in this matter will work on the lines suggested, and report their success or non-success, they will materially assist in the development of the subject on both scientific and practical lines. Should the formulas here given prove satisfactory in practice, then the yarn constructor can combine practice and theory in a most useful manner, knowing better what he himself is producing, and enabling the cloth constructor to see in his mind's eye, not only the thread interlacing, but also the fiber arrangement in the cloths he is producing. The simplicity of the formula—along with the tables supplied—brings it within the comprehension of every spinner, even if he has not the slightest acquaintance with trigonometry.

The Basis of Twist.—As it is usually the cloth constructor who has to use the yarns which the spinner produces, the basis of twist should come from him. But some means must be found of stating his requirements to the spinner in some simple form, usually in turns per inch.

1.—The cloth constructor who appreciates the value of twist in the yarns with which he constructs his cloths usually will find that the angle of the exterior fibers of yarns is the important twist condition.

He should realize, however, that exterior arrangements and interior arrangement of the fibers in a thread are two incompatibles —that he cannot maintain both in any changes he may wish to make.

2.—It is well for the cloth constructor to have before him a range of suitable angles, such as those given in Fig. 1, and to think definitely of the angle of fiber or twist he requires when building his cloth.

Note.—The angle of twist is best defined in relationship to the length of the thread rather than to the cross section or diameter.

3.—It is suggested that the following definition of the various angles of twist should be adopted, but experimenters are requested to report whether from their experience they consider these satisfactory:

5° Very Soft Twist.
10° Soft Twist.
15° Soft Medium Twist.
20° Medium Twist.
25° Hard Medium Twist.
30° Hard Twist.
45° Very Hard Twist.

4.—It must be specially noted that there is a distinct difference between an angle upon the flat longitudinal section of a thread (a) and the angle upon the rounded diameter of the thread (b). The distance round a thread

is more than three times its diameter, and this must be taken into account in defining the angle of the exterior fibers on any given thread. Fig. 2 shows this.

5.—The fiber angles of the cloth constructor may be given to the spinner in turns per inch, by the formula:

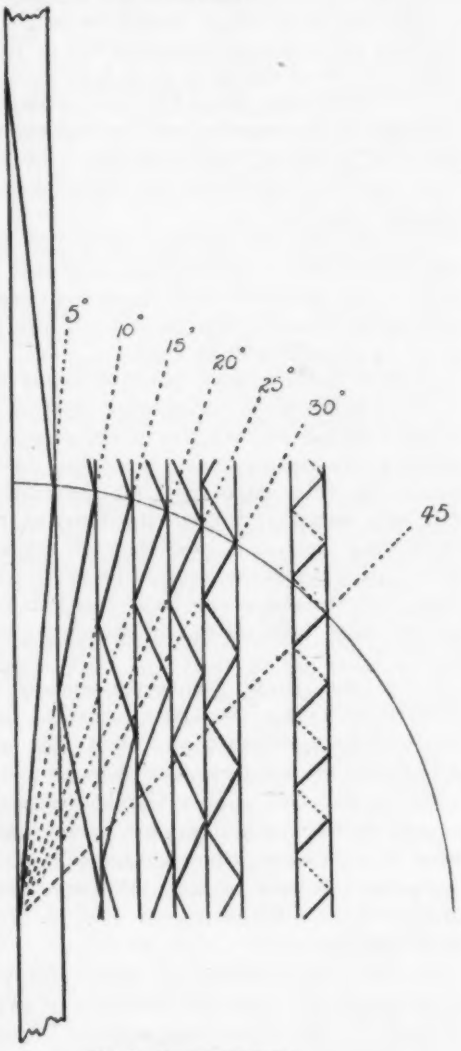


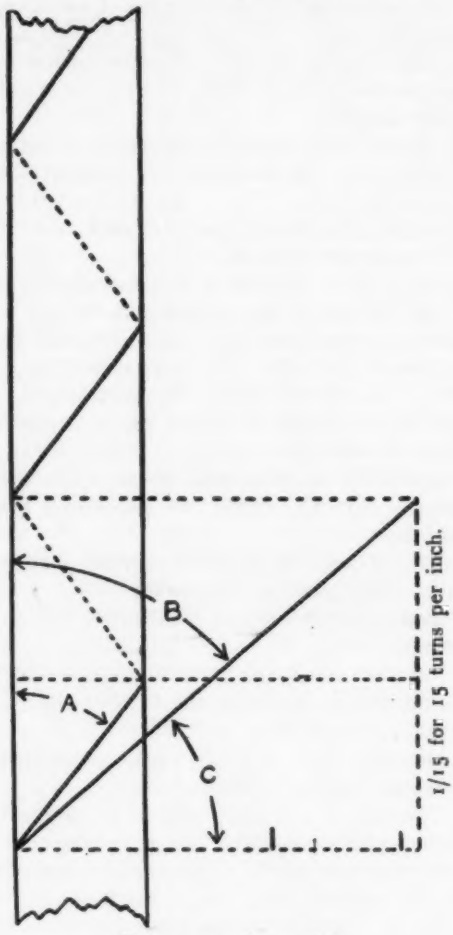
Fig. 1. 5° very soft twist,
10° very soft,
15° soft medium twist,
20° medium twist,
25° hard medium twist,
30° hard twist,
35° very hard twist.

$D \div (\pi \times \text{Cot. of B}) = T.$

When D = diameter of yarn as a whole number, Cot. of B = Cot. of longitudinal angle, i. e., of the fiber angle.

π = Ratio of circumference to diameter (3.1416).

T = Turns per inch (whole number).



1/84 × 3·1416 = 1/26.

Fig. 2. A, supposed angle of twist on the surface of the thread.
B, actual angle of twist.
C, complementary angle to twist angle.

The converse formula is also true for giving the fiber angle from the twist, viz.:

$D \div (\pi \times T) = \text{Cot. of B}$ (i. e., of the fiber angle).

The reason for this formula is briefly as follows:

(Fractional turns per 1 in.) ÷ (Fractional diameter × π) = Tan. of angle complementary to twist angle.

EXAMPLE

2/30s Botany, diameter = 1/84 in.

Turns per 1 in. = 15, or Twist = 1/15 in.

Find twist angle:

$1/15 \div (1/84 \times 3.1416) = 1.732$, Tan. of 60°. And 90° — 60 = 30° Twist Angle. (See Fig. 1.)

The tangent of 60° is the Cot. of the complementary angle, i. e., of 30°, i. e., of the twist angle.

Further, for convenience, the formula may be left with the diameter and twist as whole numbers, thus:

$84 \div (3.1416 \times 15) = 1.732$ Cot. of 30°.

Hence the formula:

$D \div (\pi \times T) =$ Cot. of twist angle.

6.—In order that there may be no confusion in applying this rule, a special sheet is printed with the rule in its true form, and the Cot. of the angles in question in list form. An example of the use of each formula is also given.

7.—With a slide rule these calculations are exceedingly simple, the procedure being as follows:

1st.—Divide diameter of yarn by π and indicate this figure by the cursor.

2nd.—Divide figure indicated by the cursor.

(a) By turns pet inch if angle is to be found, the result being the Cot. of the twist angle required. or

(b) By Cot. of twist angle given if the turns per inch are required.

The use of the slide rule is so simple for these calculations, that once employed the cloth constructor or spinner will soon learn to play with all these calculations.

8.—To emphasize the value of the above formula the following examples are given:—The twists for yarns as stated in the "Wool Year Book" being stated alongside the angles as given by the formulas.

Material.	Count.	Quality. Tops.	Turns per 1 in.	Angle of Twist.
Botany Weft	1/100s	90s	18½	15°
Botany Weft	1/80s	90s	13	12°
Botany Weft	1/60s	70s	12	12°
Botany Weft	1/40s	60s	9	12°
Botany Weft	1/20s	58s	6½	12°
Botany Weft	2/50s	70s	13	21°
Botany Weft	2/40s	70s	10½	19°
Botany Warp	1/60s	70s	13	14°
Botany Warp	1/40s	60s	10	13°
Botany Warp	2/60s	70s	15½	22°
Botany Warp	2/48s	64s	14	23°
Botany Warp	2/24s	64s	10½	24°
Mohair Weft	1/40s	7s	9½	13°
Mohair Weft	1/32s	7s	8	12°
Alpaca Weft	1/40s	8s	11	14°
Alpaca Weft	1/30s	4s	9±	14°

9.—It is not suggested that the principle of exterior fiber angle should be employed without reference to the materials in hand. The spinner or designer must take into account the nature of the fiber—its elasticity, smoothness, character, etc.—in deciding the angle of twist he thinks suitable; the rule then gives the conditions for obtaining this required angle.

It is obvious that this method will be specially applicable in schreinering, the best results being obtained when there is practical coincidence between the twist-angle and the angle of the schreinering lines.

10.—In dealing with twofold yarns the question arises as to the relative twist in the single and the twofold; for if the single be given a reasonable twist according to its count, the reasonable twist for the twofold will only partially remove the twist in the single, and the softest possible yarn will not result; whereas, if the twofold be taken as a basis, then the single may be so much undertwisted that difficulties in spinning may arise.

Upon the whole, what is known as "square twist" is advised as a basis, i. e., decide the twofold twist and then spin the single with the same number of turns in the opposite direction. This should yield the softest, fullest yarn; but for crepon and other special yarns the conditions must of course be adapted; in fact, both yarn constructor and cloth constructor must think in "fiber arrangement."

11.—The emphasizing of fiber arrangement emphasizes also the direction of twist of warp and weft in the woven fabric. Space precludes any extensive treatment of this subject here, but it is obvious that the cloth constructor has another factor for textile design at hand, when he has fully mastered the fiber angle in yarn construction.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

NICKED ROLLERS

Editor Textile World Record:

I have been having trouble for some time with nicked rollers. Have been spinning 36s worsted yarn with a careful inspection of all rollers. I found none with loose leathers, wooden carriers that were nicked, neither were these laps on carriers where bad roller bobbins were found. On examining the ratch I found I had it 3/16 of an inch longer than the longest fiber. I lowered the ratch 1/8 of an inch and it made it worse. An overlooker spinning the same yarn had his ratch an 8 1/2 inch and was not troubled with bad rollers. My ratch was 8 9/16 inches and I had from 10 to 15 spoiled bobbins a doff.

I would also like to know if any firm ever installed piece work in a spinning room, worsted, and if so what was their system and did they find it satisfactory? Raven (2117).

There are many causes that contribute towards nicked rollers besides loose covers on pressure rolls, grooved carriers and carrier laps. Among these may be mentioned: (1) the roving twist, (2) lack of pressure on covered rolls, (3) front iron rolls on which the fluting has become worn smooth, (4) front carriers too close to the front roller, (5) short ratch, (6) accumulations of dirt on covered rolls. "Raven" should first make sure that the roving he is spinning comes from the same roving frames as that which his fellow worker is using. If it comes from other roving frames it may have a harder twist. There is also the possibility that he is using an older lot, which has become more set. Then let him see to the pressure on the top rolls, making sure that there is sufficient pressure there. Also make sure that the front and back carriers are not too close to the front rolls. Look over the front rolls and see that they are in good condition as regards the fluting and general condition of their surfaces. Lastly be sure that the front pressure rolls are kept clean and well oiled. Perhaps in some of these suggestions "Raven" will find the solution of his difficulty. Dongola.

If "Raven" will carefully examine the traverse motion he will find the cause of nicked rollers, there is evidently a dwell of a few seconds on the turn.

A heart cam with an adjustable pulley at each side is a very good traverse motion and is easy and accurate if properly understood, the heart should always be pressing against one of the pulleys. The instant the point of the heart leaves the pulley on one side the heel should strike the opposite pulley.

Another cause is not enough weight on the front rollers; the thumb screw may be stiff or the spring dead, allowing the thumb screw to rest on the bottom of the thread, being to all appearances too heavily weighted, but in reality locked. These two are the most common causes of nicked rollers and I believe will solve Raven's trouble. The fault evidently lies in the spinning, seeing that another man is using the same rovings satisfactorily. Arbeler.

The difficulty may arise from any of the following causes:

1. An extension of the traverse motion from short to long.
2. Some deficiency in the roller cover that cannot be seen until the cover is cut and pulled off.
3. Covers worn too thin.
4. Rollers not oiled or lubricated properly.
5. Loose or slack rollers.
6. Weak or defective springs.

I do not know of any firms that have adopted a piece work system in their spinning room, although there is not any great obstacle in the way for installing such a system. I know of two firms in England that have adopted a bonus system for the help and overseers, and another firm that apply this system to the overseers only. In the latter case the overseer had to be able to

draw, spin, twist, reel and spool, as he had all these different machines on one floor.

Pencook.

—:—

BLEACHING AND FINISHING BEDSPREADS

Editor Textile World Record:

We would like information as to the best method of bleaching and finishing bedspreads.

Bleacher (2116).

"Bleacher" fails to state what kind of bedspreads he desires to bleach, whether they are in the piece and have to be cut and hemmed or whether they are of the regular bedspread size with fringe ready for use after being bleached and finished. If the bedspreads are in the single spread knotted or fringed the only method to use is the hand bleaching, better known to the trade as the dash wheel bleach. This is practically the same method as is used in yarn bleaching with the exception that sticks are not required as when bleaching yarn. On the other hand, if the spreads are woven in length, or in the roll form from the loom then the best method is the rope form bleach.

One man will say the caustic bleach is the best, another will prefer the lime bleach, while another will say the peroxide bleach is the best. In my opinion the best is the peroxide bleach, but it is the most expensive, although with a properly equipped plant for peroxide bleaching the cost could be reduced to bring it within the range to compete with either the caustic or lime process. The goods come out a better color from the peroxide than from the lime or caustic bleach, with less risk of having tender goods, which is one of the things that has to be looked out for in bleaching bedspreads. If a spread is damaged or tender it is a complete loss.

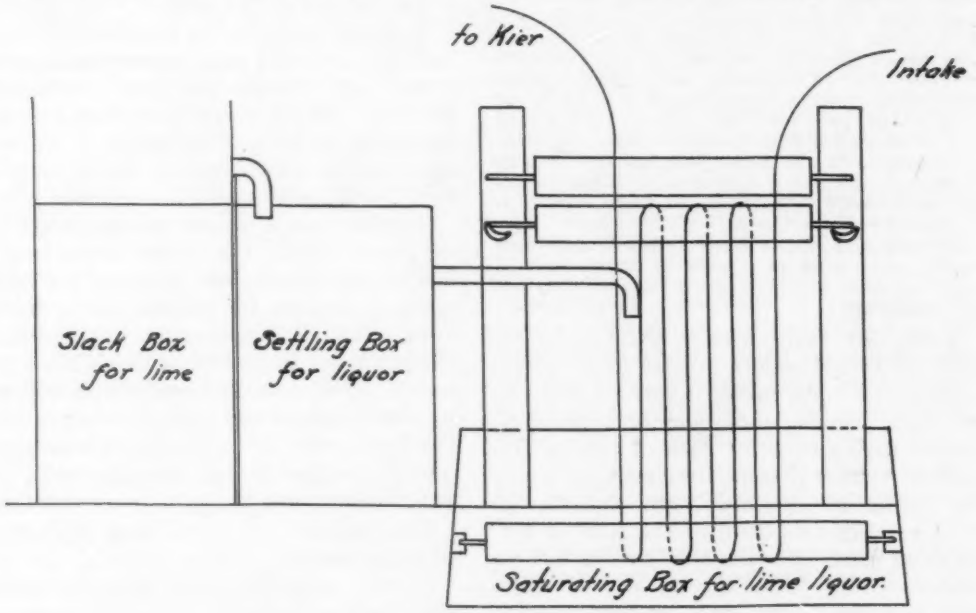


FIG. 1.

On the other hand excellent results can be obtained from the use of the lime and caustic bleaches. If I had to choose which of the two to use, I would prefer the lime bleach with the open kier system. This may be more expensive than the caustic bleach, but the gain in the end would warrant the use of the lime and ash process.

Another important point to be considered is the ingredients and also the construction of the bedspreads. I have made spreads using 25 per cent. waste and 75 per cent. cotton, and also 50 to 60 per cent. waste with the remainder cotton. In bleaching these

goods the stock has to be taken into consideration, as spreads having only 25 per cent. waste would not require the same treatment as spreads containing 50 per cent. waste. The design of the spreads must also be considered. Some designs and patterns have tight selvages, some lines being very open and slack in the wearing and others being tightly woven, thus causing considerable trouble in the bleaching process on account of being so heavy in the wet state and causing the spreads to tear on the selvage. Machines handling heavy spreads should be run very slow, not more than 80 yards per minute.

Do not be afraid of too much water with these heavy goods in the washing process. As regards the bleaching process; we will consider the caustic process first. Have the spreads sewed together to the weight required for a kier, then saturate the goods with a solution of sulphuric acid at 1 1/2° Tw. Pile in a pit or on a stage and let them age for 4 or 5 hours. This is necessary to decompose the starch and size that is used in the weaving. After ageing wash thoroughly and run into the high pressure kier. Mix a solution of 2 per cent. caustic soda, thoroughly dissolved, charge the kier, fill with the required amount of water and boil for 8 or 9 hours at a high pressure, according to the quality of the goods. When boiled wash out the kier to clear off the dirty liquid, then wash back and mix a 1 to 1 1/2 per cent. solution of soda ash. Charge the kier with this solution and the necessary amount of water, and boil another 6 or 7 hours, according to the quality of the goods. Again wash out the kier and give a chlorine bath of 3/4° to 1° Tw. Let the goods age until clear of all seeds and tucks, then wash off the chlorine and give an acid bath of 1° Tw. Leave them in the bath 3 to 5 hours allowing the acid to neutralize the chlorine. The goods are now ready for the washing and finishing processes.

The lime bleach is next to be considered. Sew the goods together as in the caustic bleach and when ready take about 1 1/2 per cent. of lime to the weight of the goods, slack it thoroughly in the slack box, then saturate the goods with the lime liquor,

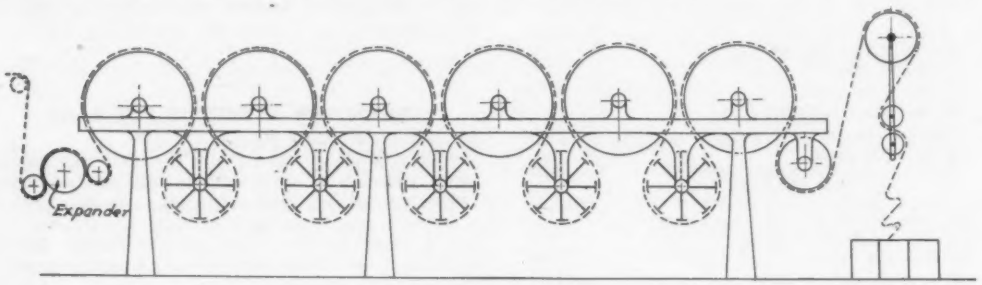


FIG. 2.

which is done by passing the goods through a machine with about eight laps, the lime liquor running in slowly to ensure perfect strength, see Fig. 1. The goods are then run into an open kier and boiled for ten hours. Then wash out and give them an acid bath to neutralize the residue of lime left in the goods. Muriatic acid is the best agent to use. Let the goods lie for 3 or 4 hours so that the acid can act on the lime, the strength of the acid being 1 1/2° to 2° Tw. When aged in this bath, wash back in the kier and mix a solution of 2 per cent. soda ash and boil for 8 or 10 hours again in the open kier. After boiling wash out of the kier through a chlorine bath of 1° to 1 1/2° Tw. Let the goods age in this bath until clear of seeds and ticks, then give them a sulphuric acid bath at 1 1/2° Tw. Let them age in this bath to neutralize the residue of chlorine left in the goods, which ordinarily takes from 3 to 5 hours. The goods are now ready for washing and the finishing process.

The machines necessary in the finishing process are the water and starch mangles and the dryer. Pass the goods through the

water mangle to squeeze out the surplus water into trucks or wagons, then take them to the starching machine, which is usually a 3-bowl mangle, containing one brass roll and two wood rolls, or one brass, one rubber and one wood roll. The mixings of size for the finishing of the goods has to be mixed according to the finish required for the spreads. These mixings cannot be determined without having samples of the spreads and samples of the goods after being finished. However, the following mixings can be used to advantage:

For Heavy Goods

30 lbs. Corn Starch.
30 lbs. Potato Starch.
10 lbs. Dextrine.
10 lbs. Epsom Salts.
Blue to shade.
120 gals. Mixing.

For Medium Goods

45 lbs. Corn Starch.
35 lbs. Potato Starch.
20 lbs. Dextrine.
20 lbs. Wheat Starch.
6 gals. China Clay (1 lb. to a gallon).
3 qts. Soluble Oil.
Blue to shade.
130 gals. Mixing.

For Light Goods

60 lbs. Corn Starch.
40 lbs. Potato Starch.
25 lbs. Dextrine.
20 lbs. Wheat Starch.
10 gals. China Clay.

Another Mixing

4 gals. Flour.
25 gals. Epsom Salts.
10 lbs. Soap.
1 gal. Soluble Oil.
130 gals. Mixing.

These recipes can be varied to suit the different qualities of goods and are a very good combination for making the goods feel nice and thick. Pass the goods through the mixture with considerable weight on the mangle to squeeze out the surplus starch, and the goods are then ready for drying. Bedspreads can be dried in different ways, either over the ordinary cylinders or on a tentering machine, over the cell dryers or on the vertical dryers. Bedspreads dry very well on a tentering machine, but the only objection to this is the clip or pin marks that are left in the spread. If the design on the spread is a flowered pattern or a raised design the best method of drying is over cylinders with reels underneath, the face side being up so that in the process of drying the evaporating steam from the cloth helps to lift up the flowers or raised design, see Fig. 2. One of the principal advantages in drying over a tenter machine is that the spreads can be held out to the width required until they are dried, while on cylinders the goods are pulled in narrow to a certain degree.

After the goods are dried they are ready for cutting and hemming, stamping, ticketing and folding ready for shipment.

Delco.

CORKSCREW EFFECT IN PLY YARN

Editor Textile World Record:

Will you please advise me the best method of using a twister in order to get a uniformly twisted 11-ply No. 20 yarn. We are using a twister with a 4 1/2-inch ring, two lines of rollers with one top roll contact driven. The twisted thread has a tendency to corkscrew in twisting which decreases the breaking strength. I wish to get a 11-ply thread well rounded and each thread of the same tension. It is important that we get the highest breaking strength possible in the ply yarn. Any information you can give me as to the style of guide eye, method of threading through the rolls, speeds and other data will be appreciated.

Manufacturer (2119).

We would suggest that "Manufacturer" communicate with the builder of the twister. In a general way, however, we think this corkscrew effect is produced where the yarn draws through a guide wire so constructed that the yarn alternately holds the twist and then lets go. Guide wires made with a straight place over which the yarn runs allowing a little traverse, we think will improve, if not altogether cure the trouble.

Wabasso.

The appearance of this yarn would indicate that the tension on the different spools in the creel was not alike, so as to make the twist slightly uneven and cause some of the threads to ride on the others. We think that perhaps some of the spools were not as full as others, or some of them dragged on the creel pins much harder than others to cause this uneven tention.

There is no special requirement needed in

the twister for twisting yarn intended for automobile tire duck. We build in great numbers twisters of 5 1/2 and 6 inch space to take 4 1/2 and 5 inch rings, 6 to 7 1/2 inch traverse, with creels for 10 and 12 ply, or twist from beams with single line of top and bottom rolls. Other details the same as an ordinary twister, for any class of work except possibly what is required for extra heavy twisting. Saco-Lowell Shops.

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SPOOLING THREAD

Editor Textile World Record:

Please advise me as to how ordinary spool cotton, as retailed for domestic use, is wound. That is, how are such small spools handled and what device is used to prevent them from over-filling?
Hanson (2103).

The machines available for spooling sewing cotton are among the most complex and highly perfected in the whole of textile industry and nothing like a full description can be attempted. A reference to the simplest form of hand-spooling machine—chiefly used today for reeling silks in which there is a great variety of shades—will illustrate the whole method of preventing overfilling. A skilled worker attends at each spindle to change the spools, control the traverse and maintain the pressure needed to lay the thread evenly and compactly. The knock-off motion is operated by her foot on the treadle, and to give the correct length she counts the layers. In the automatic and semi-automatic spooling machines the principle is the same. A ratchet motion is provided by which the required number of layers can be wound and then an automatic knock-off comes into operation.

In different types of machine the arrangements for handling the spools are different. In the Conant machine, invented by the American, Hezekiah Conant, and manufactured by William Ayrton & Co., Manchester, Eng., the spooling is automatic, but the operator has to nick the bobbin, fasten the end, eject the finished bobbin and restart a fresh spool. The machine does the work of from two to four handworkers at each spindle. The Weild machine, invented in 1870 by William Weild and made by the same firm, performs the whole series of operations and the spindles are automatically fed with empty spools from a series of hoppers. In the Baines machine of the same make the spools are distributed from one large magazine and carried forward with regularity upon a traveling band on which are cog-like troughs. From these depressions the empties are picked up automatically by the spindles and the finished spools when pushed off the spindle ends fall upon the conveyor and are dropped into a basket. The process is continuous as the band travels while the spindles are filling. In the Baines-Weild type there is a combination of features, the doffing-finger is dispensed with and the same device that doffs the finished spool guides the empty one to its place.

Enough has been said to show that a wealth of care and ingenuity have been expended in this side-track of the industry and it may be believed that high precision is necessary to the work of such machinery. A catalogue containing views and descriptions is sent. James Strand.

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KAPOK IN THE TEXTILE INDUSTRY

New York, Jan. 9, 1913.

Editor Textile World Record:

Referring to the reply to "Lincoln" in your December issue, I wish to say that the Chemnitzer Aktienspinnerei have been using kapok for some time in the manufacture of threads which resemble silk to a marked degree. The director of this company has also patented a process by which he can dye this material any color, after which it can be used in all kinds of fabrics.

Kapok, the specific weight of which is considerably less than that of water, is also being used for stuffing life preservers and belts attached to the outside of lifeboats. A small quantity of this fiber is enough to sup port the weight of a man in the water. Used in this connection, it is known under the name of life preserver cas.

If your subscriber is interested in the manufactured article, I shall be glad to obtain more complete details and if possible samples of any of the above described uses.
Louis Hirsch.

STARTING A SMALL KNITTING MILL

Editor Textile World Record:

How can a man run a knitting mill who knows next to nothing about the actual knitting or the machines themselves, but who has a fair knowledge of knit goods, yarns, etc., having been in the business since boyhood? Do the builders of knitting machines take the trouble to show a buyer how to get the best results, or do they consider their duty done when they deliver the machine to the customer? Would it be necessary to have a foreman, and if so what would be about the proper amount to pay him in a place like New York? I intend to specialize in infants' sweaters, toques and leggings, both plain and left and left (pearl) stitch. I have the following plant in view: Two automatic flat power machines, 5 and 7 needles to the inch respectively, for bodies; two smaller machines, also 5 and 7 needles for sleeves, pockets and collars; one circular machine for leggings, one circular machine for toques, and one links and links hand power machine. In the mill where most of the goods are now made for me the small machines for knitting sleeves, collars, pockets, belts, etc., are run by hand.

Merrimac (2114).

In as much as "Merrimac" has a knowledge of yarns and the finished goods, he will stand a better chance of making a success of business. The builders of machines do not, as a rule, send a man to set them up and get them in running order as in former times. A good plan would be to make an agreement with the builders to have a man come with the machines and stay a week, giving instructions to the man who is to have charge. A still better plan would be to get a young man of experience in the class of goods to be made, making a working foreman of him. A place of this size would not need a foreman. As a man in the position of foreman would want from $20 to $35 a week, a working foreman would be better. I know of a small mill in New York that has the foreman of another mill come in and fix the machines when they get out of order. There are several small mills in one building in New York that have only one man to do the machinist work. Nearly all the machine builders have offices in New York.

Trenton.

Unless "Merrimac" has actual experience I would advise him to get a first class man who understands the knitting and finishing machines, as this is the end of the business where a lot of money can be lost in a very short time. It is a good idea when buying the different machines to ask that a man be sent to set up the machines and get them in running order and give all the information possible, but the best and most satisfactory way is to get a first-class man, thoroughly experienced, who can take entire charge. "Merrimac" will find that the selling end of the business, and looking after the finances and correspondence will take up most of his time.

In a city like New York a good foreman would command a salary of at least $25 to $30 a week. Cheaper men can be had, but I would advise getting a good man, paying him a good salary and getting the work done right. If the work is started right, the production will be increased. When the foreman is engaged "Merrimac" might take up the matter of learning the business, and whenever he has a spare moment go out and let the foreman put him on a spare machine to learn how to make a garment. It is better to buy automatic stopping machines for belts, collars, pockets, cuffs and sleeves, as they will give the most satisfactory results.

Denbigh.

PAPER TUBES FOR RING FRAME SPINNING

Editor Textile World Record:

No doubt you know, that in England ring yarn is generally spun on wood bobbins, whereas on the Continent of Europe most spinning mills spin on paper tubes. The spindles for spinning on paper tubes generally have a wood plug placed on the top of the spindle. It would interest us very much to know whether the system of spinning twist on paper tubes is also coming into vogue in American mills or whether the majority of mills are still spinning on wood bobbins and pirns.

Winwick (2131).

Quite a number of mills in different localities in the United States are successfully using paper tubes instead of wood bobbins for ring frame spinning and there appears to be an increasing demand. We are sending a sample tube made for this special purpose by The Pairpoint Corporation, New Bedford, Mass.

There are 80,000 people employed in the embroidery trade of Switzerland, the total exports of which amounted to $42,817,841 in 1911.

Knitting Department

THE KNIT GOODS SITUATION

The primary markets have been visited during the past month by the majority of the knit underwear buyers of the country. They began to arrive about Jan. 6, and were in New York in full force at the time of the annual meeting and banquet on the 13th at the Waldorf Astoria.

There was not as much activity around the buying offices during the month as might have been expected when the number of buyers in the city was taken into consideration. This was explained by the fact that many orders had been placed during the month of December by the buyers in New York or given to the salesmen who made their trips during the months of October and November.

From the best information obtainable, stocks in the heavy weight goods in the hands of jobbers and retailers are smaller now than they have been for several seasons past and manufacturers are making later shipments this year than usual, as there are some who claim to have orders enough on their books for heavy weights for the present winter's use to run until well into the coming month. Ordinarily jobbers have ceased to take very much of this class of merchandise after the first of January, but this season has proven to be quite an exception to the rule. This will cut into the deliveries of spring weights in many mills and in others will shorten the production for the coming fall to quite some extent and there are those who now predict considerable shortage on account of it.

The fall business so far booked is very much larger than was contracted for by this time last year, not only in cotton lines, but the majority of manufacturers making wool goods are in a well sold up condition.

Prices are being held at about the same figures as given in our last issue, except on some of the lower priced lines of men's fleeced and ribbed goods which have been advanced from 5 to 10 cents per dozen.

The Phoenix Underwear Co. of Little Falls have withdrawn from sale their line of men's 12-pound fleeced goods on which they have taken a large business at $3.25. This garment is made with fancy pearl edge Prussion binding and very sightly for a low priced line. This concern also has a line of 13-pound fleeced shirts and drawers at $3.50, with men's combination suits made of the same cloth at $6.50.

The Union Mills have discontinued making men's fleeced goods at less than $3.60 and are now offering 12 1/2 to 13-pound weights at this price. They also show a line of 14-pound goods at $3.80 and a variety of random yarn patterns at $4.00, as well as a fine gauge line made with satin front on the shirt and packed in 2/12 boxes at $4.75.

The Hover line of fleeced shirts and drawers, weighing 13 1/2 to 14 pounds, sold last year at $3.25, have been priced for the present year at $3.62 1/2, and the High Rock line was advanced about the first of the year to the following list: 12 to 12 1/2 pound to $3.60; 13 pound to $3.70; 13 1/2 pound to $3.75; 14 pound to $3.85; 14 pound line made with silk galoon binding to $3.90. These people also make two weights of men's combination suits, one in the same weight as 13-pound shirts and drawers at $6.75 and another in 14-pound weight at $7.00.

Buyers generally have placed orders for fleeces in about the same quantities as last year. The principal sales have been made on the Jaeger color with silver grey running a good second. The orders on blue, white and corn colors have been very small.

Notwithstanding the fact that there has been a great increase in the demand for men's ribbed goods in shirts, drawers and combination suits in all grades, the manufacturers of men's flat wool goods all report a highly satisfactory business. The number of manufacturers who continue to make this class of goods has diminished in recent years, but those who are still in it have their capacity well contracted for. In these lines

the prices remain stationary from year to year. The fluctuation in the raw materials being met by changing the percentages and the grades of wool and cotton.

The Bradford Knitting Co. brought out a new garment this season. It is a light tan color, all wool, at $10.50 and is reported that considerable business had been placed on the line.

The Elliott Mills of Manchester make a very extensive line of worsted ribbed goods for women and children and are showing a great many numbers at the same price as last season for the same qualities and give us a reason for their ability to do this, that they are carrying over a large stock of worsted yarn at old prices. Their principle business is done on vests and pants at $6.00 to $7.50 and on suits from $10.00 to $18.00. In lines of this character a change that is taking place from two piece to single piece suits is very noticeable; as the number of styles in the vests and pants decrease, the number of suits increase, and the number of styles of suits that it is necessary to carry to please the public is a large one, as calls are heard for high neck, low neck, half low neck, bishop neck and Dutch neck, in addition to which there is a heavy demand for suits with no sleeves, as well as those with elbow length, and the demand for long sleeve suits is decreasing.

Some very attractive lines of so-called silk and wool vests and pants at $7.50 and combination suits at $13.50 are being shown by several mill agents. These are generally slightly lighter weight than the majority of worsted plaited lines and meeting with ready sale. Some of these lines contain high grade worsted yarn and pure silk, but in a number of the lower priced ones it is difficult to find either silk or wool.

HOSIERY

From a visit to a number of selling agents of hosiery lines, it is gathered that very little business has been booked during the past month. Buyers were in New York in goodly numbers, but it is believed that most of their activity was confined to giving details for orders given to travelers during the latter month of last year. Considerable inquiry was heard for spring goods, but as the manufacturers of light weights generally are in such a well sold up condition, not much real business was effected.

One buyer informed the writer that never before had he found it impossible to place orders on any lines at some kind of a price, but this time was obliged to give up his attempt to place orders for split foot goods to sell at 25 and 35 cents, and also in light weight fashioned lisles to retail at 25 cents. There is a good demand for wool fiber plated hosiery at this price and some manufacturers are in a position to take orders on 200-needle seamless lines at $1.85 with high spliced heels and double soles.

Low priced fleeced goods for fall show considerable advance over last season. 1912 rib top fleeces weighing 2 lb. 4 were sold at $1.00, while for the present year the price is $1.05 for 2 lb., and where 2 lb. 8 were sold at $1.05, the weight has been cut to 2 lb. 4 and price advanced to $1.10. Plain top fleeces at $1.00, weighing 2 lb. 8 last year have been cut to 2 lb. 4 and at the same price.

There seems to be an impression among the buyers that consumers are ready to buy slightly heavier weights than have been used for the past three or four seasons. Many of the new fall lines carry slightly increased weights at the popular prices.

The manufacturers of fashioned hosiery of this are all sold up high and dry and one manufacturer advises us that he has orders on his books sufficient to run his plant to its full capacity for over 70 weeks.

Many buyers are asking to have delivery dates anticipated, but are being advised that in general, manufacturers cannot anticipate delivery dates, but in all probabilities deliveries will be from four to eight weeks behind for the next month or two.

No particular change in styles called for has been noted of late. In all probability the year will show the bulk of the business being done on blacks, with white and tan holding their own for some time to come. Just at present there is a little extra demand for canary colored hosiery in the better

grades. Silk goods to sell at 50 cents and up continue to be very popular, especially in black and white.

Men's half hose are being taken in black, tan, grey and navy principally.

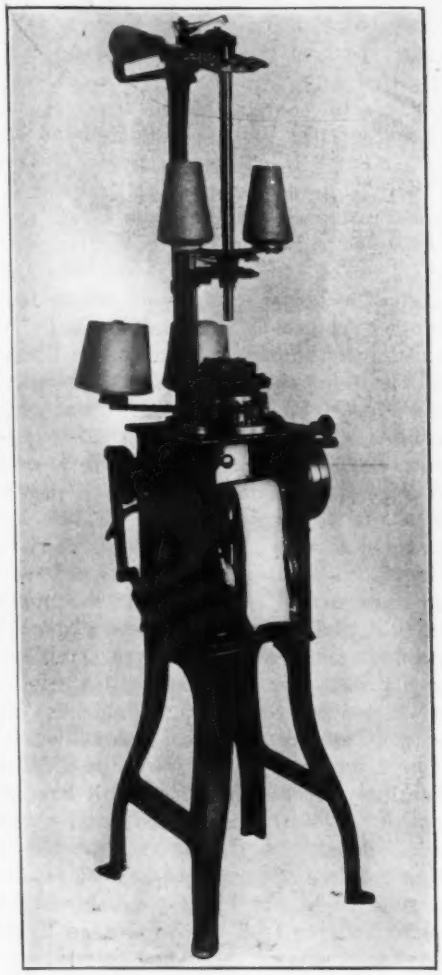
The German hosiery manufacturers are very busy. They will not accept orders for delivery before July 1st and many claim to have their production sold up to September and October.

THE AMES AUTOMATIC HOSIERY MACHINE

Manufacturers of hosiery will be interested in learning that the A. N. Ames Knitting Machine Co., Franklin, N. H., have placed on the market an improved hosiery knitting machine which embodies a number of important improvements by which the quality of the work is improved and the cost of knitting reduced. Among the features of this machine is the measuring device which is believed to be unexcelled for simplicity. It will measure any stocking from the smallest to the longest, and the leg, foot or ankle can be lengthened or shortened independently. The heel and toe measuring device can be adapted for any number of needles. The head is centrally located to ensure perfect balance.

The machine can be run with either a single or double feed without changing the pattern. The gearing, dials, chains and loose parts liable to cause trouble have been dispensed with. The bed plate which is fastened to the top of the frame has a three point bearing which prevents it from springing. The cam cylinder is of the open type and the butts of the needles can be seen at all times. The guard cams are fastened to the outside of the cam cylinder, and can be removed if necessary. The cam cylinder can be removed without disturbing the time of the machine.

The machine is provided with an indestructible skeleton ring which is self locking and, therefore, does not require pins to hold it in position. It is fitted with hardened spring steel leaves which can be replaced when broken. This enables the skeleton cylinder to be made without reducing the bars at the top and prevents all breakage at this point. Should the bars get broken the skeleton can be removed without removing the cam cylinder. The sinker cam ring is also of the open type, enabling the sinkers



THE AMES AUTOMATIC HOSIERY MACHINE

to be seen in action. If a sinker should get broken it does not tie up the machine. The sinker ring is so fitted that it cannot rise and cause uneven knitting. The ring and needle cylinders are both self cleaning. The adjustment for regulating the stitch in the leg, foot, heel, toe, ankle, garter top, looper

loose course and looping course are independent of each other. Another important feature is that all bobbins are stationary while the machine is reciprocating, which prevents the yarn from flying around and catching on the machine in knitting the heel and toe. The take-up is so that there is no chance to catch the yarn on bobbins and the greater part of the revolving stand can be dispensed with. A special device enables the drag of the take-up to be removed when knitting circular work, the idle thread being held so that it will not unwind from the bobbin when knitting the heel and toe.

The machine has the slow down speed, enabling it to be changed to the reciprocating movement without jar. There is a web take-up for ladies' string work which can be removed very easily when not needed. Also a raising device for transfer work. The machine can be run with either a single or double feed by adjusting a pin in one of two positions. All parts are accessible from the front of the machine. The frame is of the box type, cast in one piece, which prevents the shafts from getting out of line. All bearings are fitted with bushings which can be replaced at small expense when worn. The construction is simple and the number of screws and springs have been reduced to a minimum, there being a very small number of parts. Pins have been substituted for screws and driven into a shoulder so that the troublesome feature of screws working out and getting lost is obviated. Where springs are necessary a long coil has been used, as this form has been found to give the best results.

The builders of the Ames hosiery machine believe it to be the highest development in hosiery knitting and will be pleased to give further information to anyone interested.

The export trade of tops has greatly developed in recent years, the shipments from the United Kingdom in 1900 being 28,031,200 pounds; 1905, 35,386,300 pounds; and 1910, 42,129,400 pounds. The exports last year, however, decreased to 38,145,400 pounds.

A LATCH NEEDLE FOR KNITTING MACHINES

The object of this improvement in latch needles is to prevent the cutting or tearing of the knitting yarn, which, in the ordinary latch needle, is frequently caused by a rivet end projecting beyond the side of the needle. Fig. 1 is a vertical sectional view on an enlarged scale of the upper portion of a latch needle; Fig. 2 is a horizontal section on the line a-a, Fig. 1.

The latch is pivotally mounted upon a transverse pin, which usually extends through openings in the side walls of the slot and is riveted at its opposite ends, with the idea of retaining it in place and causing it to perform the additional function of laterally retaining the side walls of the slot. Lateral pressure is sometimes exerted upon the projecting portion of the latch, as by knots or enlargements upon the knitting yarn, and this lateral pressure, augmented by the leverage, acts through the medium of the pivot end of the latch to force apart the side walls of the slot, stretching the rivet so as to cause it to project at one or both ends beyond the side walls when the latter assume their normal position on the withdrawal of the pressure. The projecting portion of the rivet has a cutting or tearing effect upon the knitting yarn.

The slot for the reception of the latch should extend completely through the stem of the needle in order to provide clearance for the particles of lint which enter the slot and which, in the absence of such clearance, would accumulate and in time interfere with the proper operation of the latch. Ordinarily the slot is formed in the needle stem by means of a saw or similar cutting tool, forming a kerf extending completely through the stem from front to back. In making the improved needle a kerf is formed in the front of the needle stem. This kerf does not extend completely through the stem, and is indicated by the dotted lines, x, Fig. 1. In order to provide the proper clearance, kerfs are formed in the back of the stem, as indicated by the dotted lines, y, in Fig. 1, these latter kerfs being of such

size and so located as to leave a body of metal at the back of the slot, and preferably immediately behind the pivot end of the latch. This body of metal constitutes a bridge, integral with the side walls of the slot, and thus serves to prevent or lessen the liability to deflection of the side walls by any lateral pressure exerted by the pivot end of the latch, whether such pressure arises from

FIG. 1.

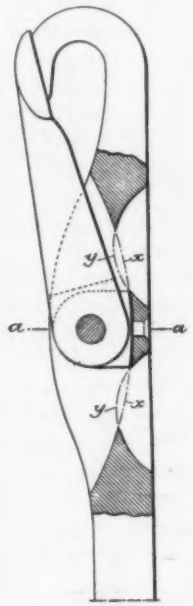


FIG. 2.

lateral strain upon the outer projecting portion of the latch, or from any other cause.

The bridge provides a support for a web or block to which the latch is pivoted, this web being secured to the bridge, preferably by a stem passing through an opening in the bridge and riveted to the latter.

The pivot end of the latch is formed so as to embrace the web, and the pivot pin passes through the web and through the opposite members of the fork and is riveted down upon the latter, as shown in Fig. 2. A simple pin may be employed if desired, or the latch may be pivotally mounted upon studs projecting from the opposite sides of the web and adapted to openings in the opposite members of the forked end of the latch, the latch, in either case, being pivotally mounted upon the web before the insertion of the latter into the slot. When this construction is adopted, the fork being spread, and, after the introduction of the web and its stud, being then contracted so as to cause the studs to enter the openings in the members of the fork, or, instead of forking the pivot end of the latch, the latter may only be deflected laterally to a slight extent, so as to occupy one side of the slot, alongside of a pivot web which occupies the other side, the pivot pin being either a simple pin or a rivet, as desired.

FANCY KNITTING

BY MAJUBA

A number of years ago there was quite a sale for anything out of the ordinary in ladies' vests. These were seldom made in colors, had only a single end, say seven white, with one blue silk on a tuck stitch, the other stitches being plain. This made the blue more prominent, as all the silk was on the face of the garment. This idea was followed on some shaped vests. The single color was sometimes followed on the next feed by a color that blended well, or perhaps another shade of the same color. Another pattern had a pink or blue covering a white on a shaped vest. This gave a pretty effect when stretched slightly, as the color on the face of the tuck stitch showed in the foreground in vertical stripes on a white ground. Naturaly the colors were one and one in the plain waist. This pattern with various colors was run many years by a Brooklyn firm.

Another firm in the middle West made nothing but fancy stitches, up to about six years ago. One garment in particular had a long run before dropping out. This was made by taking out every other dial needle and starting at a fixed dial cam, tuck the next three, cast off two, tuck two, cast off one. This is sometimes called the basket or bird's-eye stitch. This stitch made with all the needles was a good seller, but had too much weight. The genuine bird's-eye or

basket stitch is made with this cam arrangement, but a long latch needle is used where the needles are taken out. Every other needle has a longer latch than the regular needle used. In many cases the points of the push out cams have to be ground off so the regular needle latch will clear, but holding the stitch on long latches. These needles with long latches placed at various distances apart give many patterns.

To keep the weight out of this style, cylinder needles can be taken out. If a very light weight fabric is wanted, the needles are taken out, front and back, say about four in and four out, giving five rows on each side, leaving the sides for the bird's-eye. After finishing, these rows in the center of the vest give a soft, fluffy appearance to the fabric.

A double tuck stitch is simply another tuck stitch added to the regular stitch, but it leaves an extra stitch on a regular 8-feed machine. This arrangement is seldom used in the underwear trade. Endless variations can be made with a three tuck, one cast off pattern on a long latch needle machine. The most popular pattern was made by leaving every other dial needle out for about six rows, showing a pink or blue face with a white background when spread out. This was made with Egyptian cotton.

Another pattern used on shaped goods was made on a Nye & Tredick machine that had all the dial push-out cams working. Every other one on an eight feed was working opposite. Four tuck cams were coupled together, and found plain were coupled. These two sets were worked from a chain of high and low links. These chains were made so that the sets of cams would reverse every few links, or as many links as would make an inch of cloth. On the waist, of course, all cams knit plain. The effect of this reversing gives a checker-board appearance, but as the plain knit squares are somewhat wrinkled, there being more stitched in the plain than the tuck, the plain squares look larger, being raised or puffed out.

Some sweaters of a cheap grade were made in colors, say a black and white, white on plain stitch and black on a tuck stitch. When this is laid out only the black shows when worn or pulled over the head. As this style was made seamless it showed black stripes on white. Around the bottom of these garments a wide white stripe was made by reversing the dial cams, throwing the black inside and white outside. We also made a cheap sweater in this style, but we used both dial and cylinder tuck stitch, every other feed on both sets of needles tucking. Thus was reversible and many patterns in colors could be made. This sweater could be worn either side out as there was no back or front, inside or outside. The sleeves of this garment had two or three narrow stripes on the cuff and were fashioned.

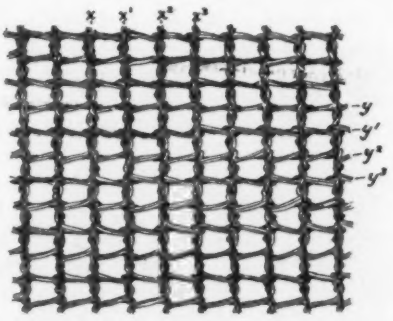
The two and two rib had many variations, among them being a long latch in the dial about every eighth needle. This two and two was made by taking out every third needle in both dial and cylinder. This must have two cylinder needles, next to the dial needles, not meshed, but where dial needles are out, all around the cylinder. This style was not always made two and two all around, but was sometimes made with more dial needles out in the front, leaving wide rows, beginning say at a size four with five rows, one row would be added for each side. This garment was finished so these rows would come in the center of the front. A long latch needle added to the above patterns gave a pretty effect after finishing.

A KNITTED FABRIC

Figs. 1 and 2 illustrate the construction of a knit fabric recently patented, and which is designed especially for laundry bags and similar articles where it is desirable that the fabric shall not unravel when handled and yet possess a considerable degree of elasticity. Fig. 1 is a plain view of the fabric as it appears to the eye; Fig. 2 is a detail view of the fabric on an enlarged scale. The fabric, which is intended to be manufactured on the ordinary traverse warp machine, is composed of three sets of threads, two filling warp threads and one binding warp thread. The two sets of filler threads are marked respectively a, a′, a^2, etc. and b, b′, b^2, while the binder threads are marked c, c′, c^2, c^3, etc. The finished fabric comprises longitu-

dinal bars x, x′, x², x³, etc. of interlooped threads composed of all three sets of threads, and transverse bars y, y′, y², y³, etc. of floating threads composed of the two sets of filler warps. The filler thread, a (starting, say from point m) extends transversely in one direction to the longitudinal bar, x, thence directly forward between adjacent intersections of this bar and the transverse bars, y and y′, thence transversely in the opposite direction to the adjacent longitudinal

FIG. 1.



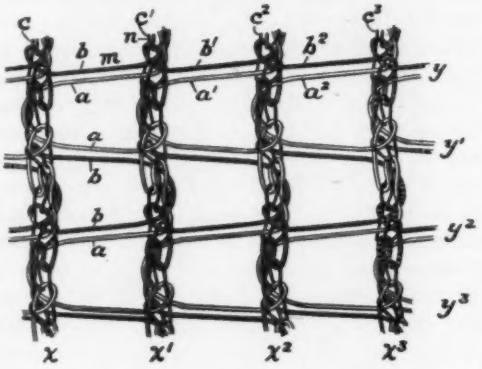


FIG. 2.

bar, x′, thence is formed into a loop at the intersection of x′, and transverse bar, y′, thence extends forward, in the course of which it is reversely curved upon itself, to the intersection of bars, x′ and y², and thence transversely toward longitudinal bar, x.

Following the binder thread, c′, from the point, n, the same extends forward through the loop of the thread, b′, at the intersection of bars, x′ and y, thence forward under thread, b, and thread, a, thence through one pocket of the reversely curved portion of thread, b′, thence back over the neck of said loop of thread, b′, thence forward successively over thread, b′, and under thread, a′, and through the loop and thread, a, at the intersection of bars, x′ and y′, thence back successively over and under thread, b′, and through the other pocket of the reversely curved portion of thread, b′, thence again through said loop of thread, a, thence forward under threads, a′ and b′, thence through one pocket of the reversely curved portion of thread, a, thence back over the neck of said loop of thread, a, then forward successively over thread, a, and under thread, b, and through the loop of thread, b′, at the intersection of bars, x′ and y², then back successively over and under thread, a, and through the other pocket of the reversely curved portion of thread, a.

From the foregoing description it will be understood that the threads are so looped together that if any one thread should be broken or cut at any point, any attempt, by pulling the loose end, to unravel the fabric, would result in tying a knot or knots in the threads and thus even more securely securing the several threads together.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay, of course, for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

BY CYMBAL

Down in Pennsylvania in a small city on the Schuylkill River, there was a small knitting mill owned by a man who was his own office boy and bookkeeper, while the help run the mill. I had dropped in to see him and as usual he greeted me pleasantly. He was sitting by a window watching a new addition to an old established hosiery mill that was being erected almost across the river. He motioned me to a chair and said, "Do you see what Mr. Blank is doing over there? Why is it I can't make money like other people? Why should I stand still while the other fellows grow? I know my business, I

buy everything and sell at regular prices," he went on. I began to ask questions and at the end of about two hours he came to the conclusion he did not know as much as he thought he did about his own mill. It was true he bought and sold everything connected with the place, but he knew nothing of the details of the mill operations. He had a boss knitter who acted as superintendent. There was also a forelady for the finishing room. Of the other help he knew nothing. I made an agreement then and there that if I found the leaks in his business and he made more money, all his future business in my line was to go to the firm who employed me.

It was a few days before Christmas, so I promised to see him New Year's day. On returning the first thing I told him to do was to get some girl to do his office work. He did not take to this idea, but he hired a bright looking girl, and told her to sit in the office and pick up what she could about office work. Then we started through the mill. There was no system of any sort and before I was half way around the room I began to regret having volunteered to become a business doctor to a sick knitting mill. The sight of the floor was enough for a starter. There were buttons, tape, knitting needles, cones, bobbins and yarn wastes scattered all over the place, and the floor around the cutting machines was paved with what looked to be good button stays. Every window sill or shelf was full of partly used yarn or thread. An old yarn case near a broken window was half full of sewing thread of all kinds, silk, cotton and mercerized. There was a layer of black dust all around and an engine on the railroad about eight feet away was blowing more smoke and dirt into the place.

We walked all around, looked at everything and went back to the office. I had asked plenty of questions, but had made no suggestions during our inspection. His first words were just what I had expected, "What did you see?" It took me some time to tell him that I had seen waste on every hand, that his help was careless, and that there were many more at work than were needed. I gave him my private opinion of a man who did not watch his business and did not know what was going on in the mill. My advice to him was to get a girl, train her for the office work and spend at least two hours every day going around the mill, giving particular attention to waste.

I had to go away then for a few days, but promised to come back and do what I could for him. When I returned we took a walk around the mill and I noticed the changes that had been made in my absence. Then began in earnest our hunt for leaks. I made suggestions and he carried them out. The floor was swept clean after sprinkling. All the odd thread and yarn that could not be used in the regular goods was run up into seconds. All the thread, tape and other supplies were to be kept away from the windows near the railroad. Knitting needles were to be kept from the floor. Yarn was to be run off clean from the bobbins instead of being pulled off when it began to show red, and a system was to be installed for watching winder waste. Cutters were instructed to turn or cut out holes and were put on piece work. There had been a boy who was supposed to open the cases and carry yarn to the winders and knitters, but by changing the position of the yarn cases and moving the winders the knitters could open the case and do away with the boy. The trays were put in back of the button sewing machines to hold the buttons from falling from the table. One boy in the shipping room was dismissed, as there did not seem to be any particular work for him to do. A record was kept of all machine parts ordered, also of supplies used, such as knitting and sewing needles. There was also a time clock installed that got the help in on time. All this kept the owner busy, but he began to see light, and over a year later he informed me that he was doing much better and took me for a walk around the place. Everything was in order, the floors and boxes were neat and clean. This good result can be credited to personal attention to business.

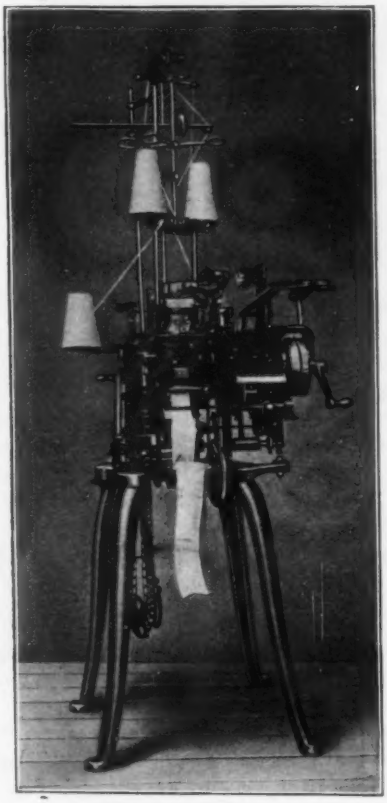
In and around Rouen, France, there are 70 cotton spinning mills, with 1,400,000 spindles and 14,000 employes. The annual production is estimated at 110,230,000 pounds.

AN IMPROVED HOSIERY KNITTING MACHINE

The accompanying illustration shows the new full automatic yarn changing and plating machine, manufactured by Paxton & O'Neill, of Philadelphia.

These machines are constructed with the view of combining durability with convenience; the ready access to all parts liable to need adjustment, being a feature appreciated by those in charge of knitting machines.

The yarn changer is noticeable for its



THE PAXTON & O'NEILL AUTOMATIC YARN CHANGING AND PLATING MACHINE

simple design, smooth, positive action and operation. Its merits are especially apparent in plated work, handling the lightest silk so as to give a perfect face to high splice and double sole, as well as the body of the stocking.

The length measuring device for ladies' hose is a valuable improvement in this class of machine, giving uniform length and saving loss of time in pairing.

The method of transferring rib tops for half hose is positive, quick and handy for the operator, and does not break quill points or sinkers. The smooth running and durability of the Paxton & O'Neill machine, the quality of fabric produced, and the ease with which operators become skilled in handling it, has made it one of the most popular machines.

Further information regarding these machines may be obtained by addressing Paxton & O'Neill, 541 North Third St., Philadelphia, Pa.

EQUIPPING A PLANT FOR MANUFACTURING SWEATERS

Editor Textile World Record:

Kindly inform us how much it would cost to equip a plant with two first-class power sweater machines and necessary equipment to manufacture sweaters? Manufacturer (2124).

The following machines would be necessary for equipping a plant to manufacture sweaters:

2 shaker sweater machines, 2 1/2 needles, two inch width of needle bed space 32 or 36 inches, as ordered	$880.00
1 machine, hand and power combined, 14 inch needle bed, cut for 10 needles to the inch, to be used in making trimming	100.00
1 winder, 12 ends, $7.50 per spindle,	90.00
1 Merrow machine, style 60 A. D.,	150.00
1 Union Special Deweer trimmer	165.00
1 looper, 2 1/2 points to the inch	100.00
1 buttonhole machine	200.00
1 button sewing machine, about	200.00
1 5 h. p. motor	200.00
Belting, shafting and other incidentals	200.00
Hoffman steam press, about	300.00
	$2,585.00

This equipment would be necessary for a production of 8 dozen per week of rough collar sweaters. The same equipment would produce about 12 dozen plain coats per week. This estimate may vary $200.

Denbigh.

Dyeing, Bleaching, Finishing, Etc.

UNGREENABLE ANILINE BLACK ON WOOL

BY CULEBRA

In the research for an aniline black on wool the first experimenters endeavored to solve the problem by robbing the wool to begin with of its power of reduction and its capacity for absorbing the acid necessary for the production of aniline black. Konitzer's process differed from these attempts. He commenced by giving the animal fiber a ground of Prussian blue, topping this with the usual aniline black. Eckstein adopted this process with the exception that he replaced the aniline black by paramine brown which when developed with bichromate of soda gives a black over the Prussian blue ground. It is hardly possible, however, to use this Prussian blue process for direct printing, or for the Prudhomme style.

J. Heilmann & Co. and Martin Battegay deposited a sealed document with the Mulhouse Society in 1910; this has recently been opened and the contents published in the journal of the Society. They have obtained an ungreenable aniline black on woolen in a single bath, after having found that the chlorate oxidizes the aniline on wool when paraphenylenediamine is added in combination with a salt of vanadium or some other oxygen carrier. On chlorinated wool, as used in woolen printing, this reaction is so sharp that the black develops at once on drying. For discharges, therefore, the acidity of the padding bath must be reduced by replacing a part of the aniline salt by acetate of aniline.

Too much paraphenylenediamine causes the black to be bronzy. The woolen fiber fixes the paraphenylenediamine very easily. It oxidizes on human hair, for example, simply with the oxygen of the air. It may be used for furs or skins with peroxide of hydrogen.

Green uses paraphenylenediamine in cotton and silk dyeing as an oxygen carrier. It is very probable that on woolen the effect is very similar, with the difference that an oxidant such as chlorate of soda is indispensable. Moreover the formation of the brown makes the black ungreenable.

The inventors of this process tried it both in dyeing and in printing on woolen in all sorts of conditions, simply soaped, bleached with sulphuric acid, bisulphite or peroxide of hydrogen, or chlorinated. The first experiments were with chlorinated woolen with fabrics that had absorbed 1.2 and 2.4 per cent. respectively of their weight of chlorine. Both these fabrics, without any apparent difference, were impregnated very easily on an ordinary padding machine. The composition of the bath was as follows:

85 parts aniline salt,
180 parts water,
70 parts acetic acid,
35 parts aniline oil,
4 parts paraphenylenediamine,
100 parts hot water,
45 to 65 parts chlorate of soda,
150 parts water,
3 parts tartar emetic,
6 parts glycerine,
50 parts water,
20 parts vanadate of ammonia,
40 parts nitrate of lead,
bring up to 1,000 parts.

As indicated the quantity of the chlorate can be varied without inconvenience from 45 to 65 parts. The paraphenylenediamine may also be used in various quantities. On a raised fabric it is very advantageous to add some thickening to the bath, for instance 180 parts of gum tragacanth 1:10, per 1,000 parts of the bath. On drying after padding the fabric takes a cream tint as in the usual Prudhomme style on cotton. For a white discharge the following paste is printed on

500 parts oxide of zinc paste.
180 parts acetate of soda crystals.
400 parts Hyraldite W.
400 parts thickening.

The thickening is composed of 100 parts maize starch, 100 parts water and 800 parts gum tragacanth 1:10. After printing on the white discharge the fabric is dried, passed through the Mather & Platt for two or three minutes, then lightly soaped at about 100° F. rinsed and dried. Color discharges are got by the addition of dyestuffs to this white discharge, which will resist it and will be fixed on the wool, such as Thioflavine S, Quinoline, Rhodamine and Floxine O.

For direct printing on chlorinated woolen the following is an example of the printing color which is very similar to the padding bath.

120 parts aniline salt.
5 parts aniline oil.
100 parts white starch.
80 parts pale dextrine.
4 parts paraphenylenediamine.
320 parts water.
45 to 65 parts chlorate of soda.
150 parts water.
20 parts vanadate of ammonia 1:1000.
40 parts nitrate of lead 5:1000.

After printing the fabric is passed through the Mather & Platt machine for two to three minutes and then treated with moist steam for one hour. In order to clear the white the goods must be soaped at about 100° F. When the fabric is not chlorinated a part of the water in the above recipe is replaced by acetic acid. The recipe is then as follows:

120 parts aniline salt,
5 parts aniline oil,
180 parts gum tragacanth,
8 parts paraphenylenediamine,
100 parts hot water,
65 parts chlorate of soda,
150 parts water,
160 parts acetic acid,
20 parts vanadate of ammonia 1:1000,
bring up to 1,000 parts.

On drying the woolen takes a greenish tint and after a passage of two or three minutes in the Mather & Platt the black develops well and thoroughly. This process can also be used for union goods. The reports upon this new process are very favorable and it is believed that the problem of producing the Prudhomme style on woolen has at last been thoroughly solved. There is plenty of choice among the acid wool colors and the vat dyes for the color reserve, and some very beautiful patterns have already been produced.

THE ANALYSIS OF ORGANIC DYESTUFFS

Geneva Switzerland, Jan. 10, 1913.

Editor Textile World Record:

The sub-commission of the International Commission of Analyses, appointed to study the question of the analysis of organic coloring matters, has examined the possibility of unifying the analytical methods at present employed, and whether such unification would be of practical use. Reports have been received from various countries, and the committee reporter has arrived at the conclusion that the unification of the methods employed in the analysis of organic coloring matters is not possible at the present state of the industry, and would not be of any practical use. An international agreement might be advantageous in certain cases, such as for organic dyestuffs which are taken as standard in the levying of custom duties. Such an agreement would protect both exporter and importer to prevent disputes. It might also be of use in the dye industry in the case of certain dyestuffs. If the unification of the methods of analysis of all organic dyestuffs is not feasible, at least useful work might be done as regards certain special cases.

The International Commission of Analyses, presided over by Prof. Lindet, after taking cognizance of the reports on this subject presented at the eighth Congress of Applied Chemistry held at New York in September, 1912, adopted the following resolution: "That sub-commission No. XI in pursuance of its work, shall investigate special cases, in which the unification of the methods of analysis of organic dyestuffs offers some interest from the international standpoint."

I therefore beg you to request through the medium of your esteemed paper, all the

heads of official analytical laboratories, and factory laboratories, as well as all those who are interested in this branch of chemistry, to have the kindness to direct the attention of our sub-commission or the president or one of the members to any case in which they consider that an international agreement would be desirable in the direction that we have indicated above. The president of sub-commission is Dr. Frederic Reverdin, 44 Avenue de la Gare des Eoux-Vive, Geneva, Switzerland. The members for the United States are Dr. B. Hesse, New York; Prof. S. P. Mulliken, Boston, Mass.; and Prof. L. A. Olney, Lowell, Mass.

THE PRINCIPLES OF WARMTH IN CLOTHING

BY REGENT

Evaporation of moisture from the human body is only one factor in the problem, why one fabric feels warmer or cooler to wear than some other. There is, of course, no more objective warmth in wool than there is in silk or in cotton or linen. The thermometer at once shows that in equal conditions all are of the same temperature and that the temperature is that of their surroundings. The warmth felt from wearing clothes proceeds not from them, but from the human body which radiates heat outwards towards its colder surroundings. In so far as they check this dissipation of animal heat, clothes fulfil their primary hygienic purpose.

At the risk of the charge of becoming elementary, let us see what are the main avenues by which clothing may delay or accelerate the subtraction from the prime heater. First there is conduction. Wool feels warmer to the touch than cotton, linen or silk, because wool in contact with the body is a worse conductor of heat than are the other fibers. Any or all of these are worse conductors in a loose state than in a compactly twisted or woven shape and for the evident reason that in a loose condition the molecular chain through which the conduction is transacted is broken by more air-spaces. Air, and especially dry air, is a bad conductor and one reason why a sheer cotton twill is colder in wear than a cotton cloth with a raised nap surface is the comparative absence of bad-conducting air spaces. Fur is the worst conductor used in making clothing and wool, cotton, linen and silk follow in the order named.

Again, there may be loss of heat by convertion. Warm air rises and cold air flows in through the interstices of fabrics or the openings of garments to take its place. In suits for wear by persons in a prone position the factor of convertion is of especial moment. There is a long traverse of warm air —say from knee to neck when one is upright, but a short traverse when one lies down. The air heated by the body escapes more quickly in the one position than the other and the fact has more than a little to do with the need of a rug when taking a nap.

Evaporation is the third of the means by which bodily heat is abstracted and it is well known that abstraction always accompanies evaporation. With so much said the questions which have suggested this article may be put in:

1. In a sleeping garment for children, which would be warmer, bleached or unbleached cotton? Give the reason for the conclusion reached.
2. Does the admixture of a small amount of wool in such a cotton garment assist in carrying off moisture from the body, and if so how does it accomplish this result?
3. Is perspiration carried off from the body in the form of vapor passing through the mesh of the fabric or is it carried off by being soaked up by the fabric and evaporating from the outside? Give this information as to cotton, bleached or unbleached, as to wool and as to a mixture.

All the authorities we can get hold of speak of cotton without any distinction between bleached and unbleached. Yet bleached is absorbent and unbleached is very non-absorbent or seems so to us.

The questions involve consideration of the circumstances influencing the loss of heat by the dissipation of moisture from the skin. Obviously some conditions are more favorable than others. Warm air, it may be superfluous to point out, takes up more moisture than cold air. Dry air takes up more than an atmosphere that is already humid. When evaporation is at work within a sleeping garment heat is being abstracted and if the heat is dissipated quickly the wearer feels cold and perchance becomes ill.

Conduction, convertion and evaporation may be separated for convenience of examination, but they operate conjointly. When the garment becomes wet by perspiration it cools the wearer by conduction, for water is a good conductor of heat. Convertion steps in because some fabrics, notably cotton, linen and silk close up their pores when wet and prevent the circulation of air. These considerations all bear on the points raised and need taking into reckoning.

There is no doubt but that bleached cotton becomes wet sooner than unbleached. How much sooner depends on the thoroughness with which the fatty or waxy matters have been removed from the fiber by the bleacher. Their fairly complete removal is necessary to the obtaining of a good white. So far as evaporation is concerned it is necessary to say that a bleached fabric is likely to be cooler by conduction than an unbleached. In the bleached garment the process of convertion will be checked earlier in a closely woven fabric, but this cannot be looked on as a hygienic gain. The manufacturer states that the authorities he has consulted make no distinction between bleached and unbleached. Perhaps they make none between fine and coarse wool, but anybody who chooses to let one drop of water fall on a bit of fabric of fine quality and another on a sample of quarter-blood will discover the difference for himself. Again chlorination, as in the case of delaine prints or unshrinkable knit goods, manifestly heightens the absorbency of wool. The distinction is clear in all cases and the man who owns a small square of bleached but undyed cotton velvet has at hand an absorbent which acts perceptibly quicker than blotting paper.

Absorbent values do not especially concern cloth manufacturers, but are of high moment to makers of surgical dressings and at the request of a manufacturer comparative tests have been carried out by E. Drabble & F. A. Upsher-Smith of Liverpool University (Eng.) and other tests by German chemists. One method adopted is simple but not exact; it consists in teasing out a small sample of loose fiber, placing it lightly on the surface of pure water and noting the celerity or slowness in sinking. Other methods consist in noting the water-holding capacity of weighed quantities of fiber placed in a tube or otherwise to note the rise of moisture in tubes containing evenly packed and carefully weighed samples. The results ascertained by Drabble & .Upsher-Smith in determining the water-holding The results ascertained by Drabble & Upsher-Smith in determining the water-holding capacity of sundry fibers used in making dressings follow:

WATER HOLDING CAPACITY

Diameter of tube 4-5cm.; weight per sq. cm. 50 grammes; weight of dressing taken, 10 grammes.

Material and Weight of Water Absorbed per 100 Grammes.	
Peat moss	160
Long bleached ramie	327
Defatted long bleached ramie	350
Commercial best surgeon's tow	490
Commercial cellulose	530
Defatted short bleached ramie	530
Commercial cotton gauze	580
Short bleached ramie	590
Defatted commercial cotton gauze	630
Commercial wood-wool wadding	710
Saponified short bleached ramie	730
Commercial "best" cotton-wool	775
Commercial wood-wool	780
Commercial "super" cotton-wool	800
Defatted "super" cotton-wool	880
Defatted best cotton-wool	900

The data are enough to show that when cotton is defatted (in this case by using ether) the more absorbent it becomes. There is more in the case, however, than the nature of the plant from which the fiber is derived. Besides conduction there is at work the force known as capillary attraction; the force by which moisture creeps up a lamp-wick or a cotton rope from below. As is observed by the Liverpool chemists: "Absorbency is a loose term, as a little reflection will show that besides the moisture taken up by the fibers themselves, a considerable quantity of interstitial liquid is retained by capillary attraction among the fibers, this quantity depending primarily on the length of the fibers and secondly on their length and arrangement and the pressure to which they are subjected."

Any wearer of raincoats has the means of assuring himself that capillary attraction is greater in the case of cotton than of wool. Rain "creeps" up the inside of cotton coats

more than of woolen ones. To the question of how perspiration escapes the answer is two-fold: In some circumstances undoubtedly by convertion and in others by capillary force. For a homely illustration reference may be had to the not unfamiliar remedy of the cold pack. The patient is wrapped first in a wet sheet, of which the pores close by contraction. Heat would be transmitted quickly from the body, but the passage is checked by a thick covering of wool blanket or feather quilt. The water of the sheet is converted into vapor and the perspiration becomes profuse. The body is in a very bath of vapor and it is easy to deduce that wool does not convey moisture by conduction or capillary attraction as readily as cotton. Convertion proceeds longer where wool is worn because wool is longer in "wetting-out" and closing its interstices. How a little wool mixed with a lot of cotton in a fabric for sleeping suits will delay the regular processes obviously depends on numerous considerations. One which need not be forgotten is that wool will hold more moisture than any other fiber without itself feeling wet to the touch. The questioner says nothing of the texture of his cotton cloths, but it is manifest that in practice much depends on the openness or closeness of the weave and something too on the slackness or tightness of the twist in spinning.

TREATING TIN WEIGHTED SILK GOODS

A process for treating silk goods that have been weighted with tin solutions has recently been patented in this country, the object being to prevent the weakening of the goods when exposed to light and air. A 1 per cent. solution of a hydrazin salt, preferably hydrazin acetate, is first prepared. With this solution the silk, already weighted and dyed, or at least weighted, is treated, being thoroughly impregnated with the same. The silk is then dried, whereupon it will be found not only to possess substantially its original strength, but to retain it, so that after a sufficient time shall have passed to bring about the decay of silk untreated by my method the silk so treated will be substantially as strong as it was when it emerged from the treatment.

DYEING BLUES ON COTTON PIECES

From Kalle & Co., Inc.

Blues are always in vogue, that is, blues of some sort, and navy in particular. On the market today are blue dyestuffs of almost all shades and qualities that can be desired by the dyer, and yet there is something lacking.

Some blues are very cheap, but, as might be expected, have corresponding weak points. For example, we will take the well known Benzo Azurines. This is cheap and is comparatively strong and reasonably fast to washing. It, however, turns very red in artificial light or under the influence of heat. It is not at all fast to light either, except when after-treated with bluestone, and such an after-treatment changes the shade quite a little.

The change in shade under heat, as for instance in drying or hot pressing, is a very decided disadvantage, for the simple reason that it makes the matching to shade very difficult. This is particularly noticeable when the blue is used in combination with other colors. Then there are blues which have exceptional fastness to light, but these are rather expensive and besides are not particularly fast against washing. So, we might go through the line citing examples of the shortcomings of otherwise good products. What is the result? Where different classes of goods are being handled, it is necessary to use sometimes four or five, or even more, different blues to meet the various requirements.

There is a product to be had which in itself combines many, if not all, of the desirable features: Naphtamine Brilliant Blue B W (Kalle & Co., Inc.) is a blue of medium shade, so that it is possible to use it for a variety of shades from a fairly light blue to a navy, and with a little black for dark navies. This product has very good fastness to washing, rubbing, etc., and is fairly fast to light. It is very easily soluble and dyes very level. In addition, it does not turn red in artificial light, nor does it change shade in drying or hot pressing. After-treating with bluestone makes it very fast to light without altering its shade. It dyes very well in either

pad or jigger, either straight or in combination with other colors.

The properties enumerated are valuable ones, and when one considers that the product is not expensive, its value can be more fully appreciated. The short description given refers particularly to the dyeing of cotton pieces, but the blue in question is just as well suited for dyeing cotton in other forms, and is besides very valuable in union dyeing, because it colors the cotton much heavier than the wool, which is at all times desirable.

FANCY MIXTURES FOR YARNS AND COATINGS

BY "TECHNICUS"

From the Dyer and Calico Printer

Grays produced by a mixture of black and white can, theoretically, be imitated by an infinite number of mixtures of complementary colors: blue and orange, red and green, violet and yellow, and so on. This can be done with textile material in several ways. By means of a carding engine a lot of blue wool or cotton can be thoroughly blended with another lot dyed orange to produce a general effect of gray. If, in a loom, cloth is woven with its alternate visible threads colored blue and orange, or red and green, etc., the effect is again a gray. With patience, no doubt, these various combinations could be made to be good matches of each other, provided the mixtures of loose fibers or woven cloth are looked at from such a distance that their constituent colors blend beyond individual recognition. It would be quite possible for the costumes of two ladies to look identical from across a wide street, though one might be a mixture of violet and yellow and the other of blue and orange. Closely examined they would be quite distinct—in other words, two very different patterns. Further, the same shades may be obtained by using, three, four or more solid standards in different mixture, each mixture being a quite distinct effect when closely examined, but, at a distance, blending to the average.

It is evident that the number of mixtures is infinite, and, perhaps, our further description will surprise the reader with the vastness of the number. To talk vaguely of an "infinite" number is not so impressive as will be a more detailed description of the illimitable scope there is for these mixture effects. And what will be done will only really be a plan for a scientific invasion of the territory, so to speak. As a preliminary, however, it will be expedient to mention a few branches of the textile trades where some system in the originating of mixture patterns will be useful.

Loose wool and cotton, after being dyed various shades, are mixed in card, gill-box, or comb, according to the special branch of the trade, for further manipulation into gentlemen's suitings, ladies' dress goods, grandrelle yarns for hosiery, and a variety of other materials. Single yarns of different colors are twisted to make two, three, or more, fold yarns for all the above trades, and, in addition, the carpet trade, and for silk embroidery. In textile piece goods colored effects got by weaving contiguous threads of different colors, both warp and weft, are common.

These last two effects are generally "louder" than the mixtures of loose fibers. To allow the colors to blend into one shade they must be viewed from a longer distance. The patches of color are larger, and, in the technical term, "ride" more distinctly. Only a moderate approach to the pure colors of the spectrum can be obtained on textile fibers. This practical limitation of the dyers' art reduces the number of effects theoretically possible. It is reduced still further by the fact that for many trades the brightest colors that the dyer can produce are not fast enough to other requirements—light, rubbing, washing and milling. But with all these deductions from infinity what is left is still, practically (if not theoretically) infinite, as we will show. What we may refer to as the dyer's spectrum is possible in the following trades: silk embroidery yarns, hosiery and carpet yarns, dress goods.

The writer has taken the trouble to endeavor to make a spectrum of self-shades on wool, by picking out from a very comprehensive pattern-card all the brightest self-

shades, and pasting them in a row on a sheet of paper, the patterns touching each other. The result is striking, but far from perfect. The relative brightness of the shades differs to a remarkable degree. Beginning with Auramine and on through acid yellows and oranges to scarlets, the effect is good, but passing on to the pinky-reds, the reddish-violets, blue-violets, blues and greens, the "spectrum" is jumpy, so to speak.

To improve it in this respect, many shades would require to be dyed with combinations of dyestuffs. When two self-shades show an abrupt transition, a dyeing made from equal parts of the respective dyestuff will bridge the gap—supposing, of course, that the dyestuffs are about of equal strength. This is not always the case, but, at the worst a few trials will bring about the desired result. With loose material, of course, there would be no difficulty in mixing, but the spectrum just referred to consisted of patterns of fine cloth, when no such mixing was possible.

The number of patterns used was forty-seven, but between the greenest-yellow (Auramine) and the yellowest-green (Acid Green M conc.), there was a very big gap. Allowing for this, and perhaps dropping out one or two of the oranges and scarlets, which merged almost insensibly into one another, a spectrum of fifty colors would be a very nice one—each standard would be quite distinct from its next neighbors, yet altogether they would seem to fill the space.

A common plan is to exhibit colors in ranges from a light tint to a full dyeing. Four or five distinctive steps are easily obtained. Dyestuff makers' pattern-cards often show such ranges. Spinners and manufacturers may extend the number to even twelve per range. Supposing only five to be adopted, this means that five dyers' spectra could be obtained, making 250 distinct, practical, adaptable standards for hosiery, carpets, dress goods, embroidery, yarns, etc. This does not take into calculation the secondary and tertiary shades, and all these, dyed as solid shades, would come in for the purpose here described. To ring all the changes on these would require eternity; and luckily, the exigencies of fastness, etc., not only reduce the number, but by compulsion, guide experiment in prescribed lines.

Of course, some trades require many more standards than others. In the carpet trade, a large floral design will employ a tremendous number of shades. Consider rose-pinks. The five dyers' spectra just mentioned may not provide enough to satisfy the designer. The worsted coating designer may have a superfluity of them if he has more than half a dozen odd shades; it is bad management to overburden one's self with standards.

For the sake of brevity and simplicity, what will be here attempted will be a de-

1	2	3	4	5	6	7
V	I	B	G	Y	O	R
R	V	I	B	G	Y	O

FIG. 1.

1	2	3	4	5	6	7
V	I	B	G	Y	O	R
O	R	V	I	B	G	Y

FIG. 2.

1	2	3	4	5	6	7
V	I	B	G	Y	O	R
V	I	B	G	Y	O	R
R	V	I	B	G	Y	O

FIG. 3.

1	2	3	4	5	6	7
V	I	B	G	Y	O	R
R	V	I	B	G	Y	O
V	I	B	G	Y	O	R

FIG. 4.

1	2	3	4	5	6	7
V	I	B	G	V	O	R
R	V	I	B	G	Y	O
R	V	I	B	G	Y	O

FIG. 5.

scription of how the changes can be rung on a few standards. The same principles will apply to larger numbers. We will commence with the seven spectrum colors, as given in the physics books of our school days, those whose initials form the mnemonic word, VIBGYOR:—Violet, Indigo, Blue, Green, Yellow, Orange, Red. The second name is hardly dye house nomenclature, but for our present purpose may be allowed to pass.

The first step is to ring the changes in pairs. Proceed as in Fig. 1, by making three horizontal rows of squares, seven squares in a row. The first row is numbered one to seven; the second row contains the seven initials; the third also, but in the third each letter has been moved one square to the right. The letter O occupying the last square, letter R comes under number one.

For the next permutation, letter V, in the third row, is placed under square 3, that is, two squares to the right of V in the second row, as Fig. 2. (The letters in the second row retain their positions throughout the changes of the bottom series.)

It is evident that the third row of letters can occupy seven positions in relation to the second, but the first position, where the corresponding letters are in the same vertical line is no use to us, because it represents a juxtaposition of the same colors from which no mixture effect could be obtained.

There thus remains $7 \times 6 = 42$ different vertical pairs of letters, representing the same number of primary mixtures. In Fig. 1 we should get violet with red, indigo with violet, blue with indigo, and so on—seven in all. Fig. 2 would provide violet with orange, indigo with red, and so on for another distinct seven. Repeating six times gives us the forty-two separate and distinct combinations.

If it is a case of scheming to produce two-fold yarns, forty-two is the limit from these seven colors, but with three-fold, using only two colors in each twist, the number advances to eighty-four, because from each vertical pair we can get two combinations.

(To be continued.)

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 17

BLACK ON COTTON YARN

Naphtamine Fast Black S D E on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Naphtamine Fast Black S D E. (Kalle & Co., 530 Canal St., New York.)
1 lb. Soda Ash.
30 lbs. Common Salt.

Enter yarn at 180° F., and dye at a boil for one hour. Rinse and diazotize by working for 15 minutes in a cold bath made up with

4 lbs. Sodium Nitrite,
4 lbs. Sulphuric Acid,

then develop 15 minutes in a cold bath made up with

1½ lbs. Beta Naphthol

dissolved in caustic soda solution.

Naphtamine Fast Black S D E when dyed in this way will be found to possess very good fastness to washing.

Recipe No. 18

YELLOW ON COTTON YARN

Diazo Fast Yellow 2 G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diazo Fast Yellow 2 G. (Farbenfabriken Co., 117 Hudson St., New York.)
40 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 180° F., and dye at a boil for one hour. Rinse well and diazotize for 1/2 hour in a bath made up with

2½ lbs. Sodium Nitrite.
7½ lbs. Hydrochloric Acid 30° Tw.

Rinse again and develop in a cold bath for 1/2 hour made up with

1½ lbs. Developer Z dissolved in water.

Rinse once more and soap at a boil.

Diazo Fast Yellow 2 G possesses very good fastness to light and washing.

Recipe No. 19

VIOLET ON WORSTED YARN

Oxy Acid Violet R O O on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Oxy Acid Violet R O O.
(Geisenheimer & Co., 189 Front St., New York.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Oxy Acid Violet R O O possesses good fastness in general and as it is fast to chrome will be found valuable in the shading of chrome colors.

Recipe No. 20

BRILLIANT RED ON WORSTED YARN

Brilliant Military Red B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Brilliant Military Red B.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
2 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Brilliant Military Red B is worthy of notice on account of its combined brilliancy and fastness to light.

Recipe No. 21

BLUE ON WORSTED YARN

Anthra Alizarine Blue R Extra on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Anthra Alizarine Blue R Extra.
(F. E. Atteaux & Co., 174 Purchase St., Boston, Mass.)
4 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter at 100° F., bring slowly to a boil and dye at a boil for one hour.

Cool bath to at least 170° F., then add

1 lb. Potassium Bichromate

and boil 3/4 hour longer.

Anthra Alizarine Blue R Extra possesses the fastness characteristic of the mordant acid colors.

Recipe No. 22

RED ON COTTON YARN

Dianil Light Red 8 B W on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Dianil Light Red 8 B W.
(Farbwerke-Hoechst Co., 122 Hudson St., New York.)
2 lbs. Soda Ash.
40 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Dianil Light Red 8 B W combines excellent fastness to light, with good fastness to washing for a direct cotton color. They are easily soluble, dye level and are well adapted to machine dyeing.

Recipe No. 23

BLUE ON WORSTED YARN

Meta Chrome Blue Black 2 B X on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Glauber's Salt.

Bring to a boil and then add

3 lbs. Meta Chrome Blue Black 2 B X.
(Berlin Aniline Works, 213 Water St., New York.)

which has been separately dissolved with

½ lb. Aqua Ammonia.

Also add

3 lbs. Meta-Chrome Mordant.

Enter yarn at 100° F., raise slowly to boil in 3/4 hour and boil for 2 to 2 1/2 hours.

Meta-Chrome Blue Black 2 B X possesses very good fastness to light and most of the other color destroying agencies.

Recipe No. 24

YELLOW ON WORSTED YARN

Titanium Tannin Yellow on 100 lbs. worsted yarn. Prepare the dye bath with

¼ lb. Titanium Mordant.
(Eastern Chemical Co., 37 Pittsburgh St., Boston, Mass.)
½ lb. Tannic Acid.
4 lbs. Sulphuric Acid.
20 lbs. Glauber's Salt.

Enter at 110° F., and dye at a boil for 40 minutes.

Titanium Yellow combines cheapness and simplicity with extreme fastness.

Recipe No. 25

YELLOW ON WORSTED YARN

Titanium Tannin Yellow on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Titanium Mordant.
(Eastern Chemical Co., 37 Pittsburgh St. Boston, Mass.)
2 lbs. Tannic Acid.
4 lbs. Sulphuric Acid.
20 lbs. Glauber's Salt.

Enter at 110° F., bring slowly to a boil and dye at a boil for one hour.

Titanium Yellow combines cheapness and simplicity with extreme fastness.

Recipe No. 26

BLUE ON WORSTED YARN

Meta-Chrome Blue G on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Glauber's Salt.

Bring to a boil and then add

4 lbs. Meta-Chrome Blue G.
(Berlin Aniline Works, 213 Water St., New York.)

which has been separately and completely dissolved with

½ lb. Aqua Ammonia.

Also add

4 lbs. Meta-Chrome Mordant.

Enter yarn at 100° F., raise slowly to a boil in three-quarters of an hour and boil for two to two and one-half hours.

Meta-Chrome Blue G possesses good fastness to light and most of the other color destroying agencies.

Recipe No. 27

TAN ON COTTON YARN

Diamine Tan S B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs Diamine Tan S B.
(Cassella Color Co., 182 Front St., New York.)
1 lb. Soda Ash.
25 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Diamine Tan S B is extensively used for the dyeing of knit cotton goods in the rope form, dyeing evenly.

Recipe No. 28

GREEN ON WORSTED YARN

Salacine Dark Green C S on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Salacine Dark Green C S.
(Kalle & Co., 530 Canal St., New York.)
5 lbs. Acetic Acid.

Enter at 120° F., bring to boil and dye at boil for one hour. Then add

2½ lbs. Potassium Bichromate

and continue the boiling one hour longer.

Salacine Dark Green C S is also suitable as a neutral dye in union dyeing. Afterchroming only slightly changes the shade but increases the fastness to fulling a great deal.

Recipe No. 29

BLUE ON WORSTED YARN

Meta-Chrome Blue B on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Glauber's Salt.

Bring to a boil and then add

4 lbs. Meta-Chrome Blue B.
(Berlin Aniline Works, 213 Water St., New York.)

which has been separately and completely dissolved with

½ lb. Aqua Ammonia.

Also add

4 lbs. Meta Chrome Mordant.

Enter yarn at 100° F., raise slowly to a boil in three-quarters of an hour and boil two to two and one-half hours longer.

Meta-Chrome Blue B possesses good fastness to light and most of the other color destroying agencies.

Recipe No. 30

VIOLET ON WORSTED YARN

Alizarine Geranole B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Alizarine Geranole B.
(Farbenfabriken & Co., 117 Hudson St., New York.)
15 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter yarn at 140° F., and dye at a boil for one hour.

Alizarine Geranole B possesses excellent fastness to light, and good fastness in most other respects.

Recipe No. 31

BLUE ON WORSTED YARN

Fast Acid Marine Blue H R R X. Prepare the dye bath with

3 lbs. Fast Acid Marine Blue H R R X.
(Badische Co., 86 Federal St., Boston, Mass.)
20 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for one hour.

Fast Acid Marine Blue H R R X gives an excellent shade of navy blue possessing good fastness in most respects.

Recipe No. 32

BACK ON WORSTED YARN

Kresol Black K 5 B on 100 lbs. worsted yarn. Prepare the dye bath with

7 lbs. Kresol Black K 5 B.
(Geisenheimer & Co., 189 Front St., New York.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 140° F., and dye at a boil one hour.

Kresol Black K 5 B is very fast to the ordinary finishing processes and leaves white cotton effect threads unstained.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Automatic Cutting Machine. The Artos Engineering Company, Milwaukee, Wis., have developed a new type of automatic cutting machine, similar in principle to the other machine which they build, but smaller and particularly adapted for cutting samples and labels. It cuts lengths from 5/8 of an inch up and has an output ranging from 100 to 200 pieces per minute according to the lengths cut. This new model meets a special need.

Looper. The Southern Textile Machinery Company of Paducah, Ky., has recently placed upon the market a new two thread steady dial looper, which they claim is an improvement over the Davis looper formerly manufactured by this concern. It has fewer parts and also what is known as a somersault movement to the hook. One of these machines has been in constant operation for the past two years. The Southern Textile Machinery Company has reorganized and is under new management. R. A. Vine has been retained as Eastern sales manager with offices at 1522 North 59th St., Philadelphia.

Leatheroid Heddles. Edmund F. DeRouin, 13 Union St., Lewiston, Me., has placed on the market a leatheroid heddle which is being used by a number of large cotton mills with very good results. Leatheroid is a cellulose product. It is not combustible like cellulose, is as hard as raw hide, nearly as elastic as whalebone and much like horn in texture. It is not affected by oil or grease and will not absorb oil. When soaked in water it becomes soft like rubber, but does not dissolve even when boiled. Leatheroid can be cut, punched, sawed, drilled or turned and has demonstrated its advantages as a material for loom heddles, some of which have been running for seven years.

Beam Dyeing Machine. The Perfection Dyeing Machine Co., Columbus, Ga., is placing on the market the Payne & Wallace Beam Dyeing Machine wherein the yarn is dyed, washed, dried by compressed air on the beam and ready for the slasher without other processes. It is especially adapted for direct sulphur and vat colors. The machine is now in operation in a number of mills in the South.

A Mechanical Stoker. The Sanford Riley Stoker Co., Ltd., Worcester, Mass. An improved automatic stoker of the self-dumping, underfeed type. It has a mechanical movement of the fuel bearing surfaces, resulting in a continuous cleaning. The entire surface in the furnace is covered with live fire. The makers claim that it takes less space and requires less head room than other types.

Warp Stop Motion. Marvel Bros., 45 Mosher St., New Bedford, Mass. An improved drop wire for stop motions. The improvement consists in tapering the drop wire to prevent the wires from becoming crossed or thrown out of place. It is claimed that the Marvel wire will always drop when the thread breaks.

Beam Dyeing Machine. The Columbus Truck & Supply Mfg. Company, Columbus, Ga., are putting on the market a machine known as the Morton No. 2 Beam Dyeing Machine for direct sulphur and vat dyes. The liquor is pumped into the center of the patented hollow warp beam and then forced through the yarn. After the yarn is dyed and washed in the machine the excess moisture is extracted by compressed air and the beam is ready for the slasher. The capacity of the machine is said to be 6,000 pounds of finished warp yarns per day.

WEIGHTING OF TOP ROLLS OF SPINNING FRAMES

Cotton spinners will be greatly interested in an improvement in the method of weighting top rolls of spinning frames which has been developed by A. H. Morton, who for many years was superintendent of the Kitson and Lowell Machine Shops, at Lowell, Mass. Mr. Morton is bringing to the attention of mill men a number of improved textile devices. By his method of weighting the top rolls of spinning frames, the pressure of the front rolls in the roll stands is very much reduced. With the present system of weighting there is an excessive pressure on the front roll bearing, causing the necks to wear out rapidly, requiring renecking of the rolls and floating out the roll stands, and frequent recovering of the front top rolls, all of which entail great expense and a considerable loss of production. As every spinner knows, all the pressure is applied to the bottom rolls by the present system of weighting, whereas by the Morton method the weights on the levers tend to lift the bottom rolls from the roll stand and do not transmit any of the pressure between the top and bottom rolls to the roll stands at all. This will be readily understood by referring to the illustration wherein the weight is applied in the usual way to the lever, which rests on the nut which is screwed to the stirrup, which in turn rests on the top saddle, transmitting the pressure to the top rolls in the usual way. It will be noted that this short end of the lever is in no way connected to the roller beam, as it usually is by the lever screw, but the upward pressure is taken by the pin and transmitted by the oilless bearing to the underside of the front roll, so that not only is the pressure not transmitted to the front roll necks in the roll stands, but if not restrained would lift the front roll upward and out of the roll stands. Furthermore the pressure in the roll stands is practically the same whether a light or heavy weight is used on the levers. If more pressure is required between the top and bottom rolls to make the roving draw properly, the change from a two pound to a four pound weight on the levers does not increase the pressure in the roll stands, as the weights balance one another. As is well known with single boss rolls, there are four weights between each two roll stands. It might not seem reasonable, but it is true, that there is less pressure in the roll stand when all four weights are on them than when only two are on, as the writer has seen demonstrated. Mr. Morton will make this clear to anyone interested.

With this decrease in pressure in the roll stands, there is a very noticeable decrease in the power necessary to turn the front roll in its bearings, which means less wear on the roll gearing with increased life for all gears in the front roll train. The proper distribution of weight on the front, bottom and back roll stands has been given due attention, as shown at Fig. 2. That there is great need of this will be evident to anyone who will lift first the front and then the back top roll as usually weighted and note the excessive weight on the front roll as compared with

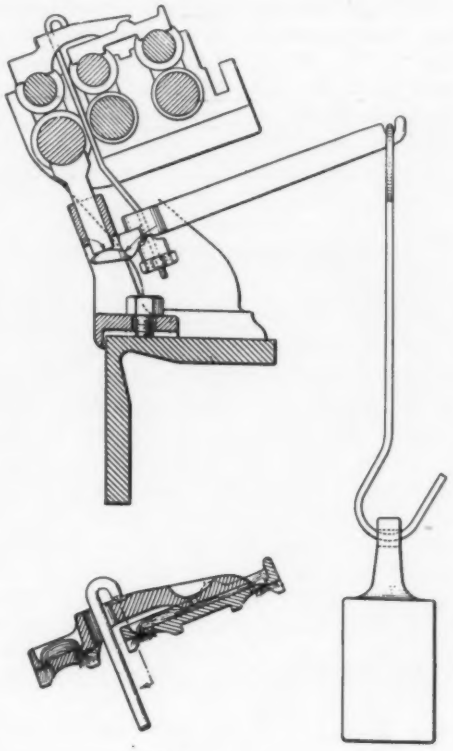


FIG. 2. FIG. 1.

that used in direct weighted top rolls. Patents on this system are now pending both in the United States and Great Britain.

Many of the leading cotton spinners of the country have examined the improved weighting device and have pronounced it a great improvement in ring spinning. Several of them have already ordered frames from different machine builders specifying that the rolls should be weighted by the Morton method. Mr. Morton intends to introduce this and other textile devices to the trade by demonstrating their advantages and thus inducing mill owners and managers to specify that any machinery they may order shall be built with the Morton appliances. Manufacturers and others interested can examine these devices by arranging with Mr. Morton at 95 Harvard St., Lowell, Mass.

THE YARBROUGH PICK MOTION

The difficulties connected with the ordinary picking motion on looms have long made this part of the weaving mechanism a favorite field for inventive ingenuity, but little success has been attained in making radical changes in the ordinary noisy and wasteful picking device. The Yarbrough pick motion, manufactured by the Yarbrough Pick Motion Co., Grant Bldg., Atlanta, Ga., has recently been placed on the market and is offered to the trade as a solution of the difficulties connected with operating the shuttle in weaving. It combines a pick motion and automatic brake for the picker stick, a shuttle check and the thick and thin place preventor, all in one device.

Fig. 1 shows the device attached to a loom and in the position taken just after the shuttle has been thrown. A hollow piston which fits closely in a cylinder, A, is connected by a strap to an eccentric keyed on the rocker shaft, as shown. This shaft instead of being rocked in the usual manner is driven by a sprocket chain from the crank shaft. The guides, K-K, are fastened to the piston and as the rocker shaft revolves the piston, B, is raised or lowered. After the shuttle has been thrown, as shown at Fig. 1, the piston, B, is lifted about 1 1/2 inches. This also raises the cylinder, A, and the picker stick is rocked outward to a position shown in Fig. 2. This position is about 2 inches short of the extreme outward point to which the picker stick will be pushed by the shuttle when the shuttle enters the box. This forms the shuttle check.

As the piston and cylinder reach the highest point in their travel, the outer end of the setting lever, E, drops, forcing the link, F, and tripping lever, G, into the position shown at Fig. 2. This locks and holds the

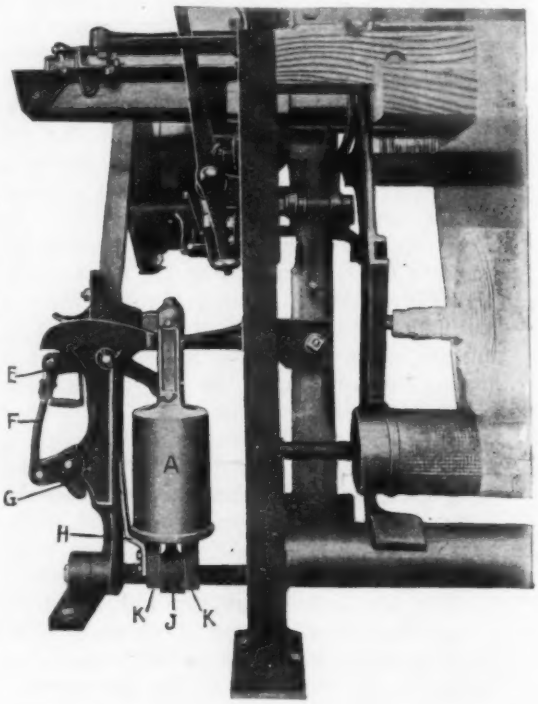


FIG. 1.

cylinder, A, firmly in its topmost position. The piston, B, is now drawn downward and part way out of the cylinder, A, to the position shown in Fig. 2. As the piston, B, travels downward a vacuum is created inside of cylinder, A, between the closed tops of piston, B, and cylinder, A. As the piston, B, travels downward the adjustable tripping dog, H, engages the end of the tripping lever, G, rotating the lever, G, down and outward. This releases and unlocks the cyl-

inder, A. The vacuum that has been created inside the cylinder, A, acts to induce an air pressure on cylinder and piston, tending to close or destroy the vacuum. This atmospheric pressure, as everyone knows, is approximately 15 pounds to the square inch. The unlocking movement frees cylinder, A, and permits the air pressure on cylinder, A, to instantly drive it downward to close the

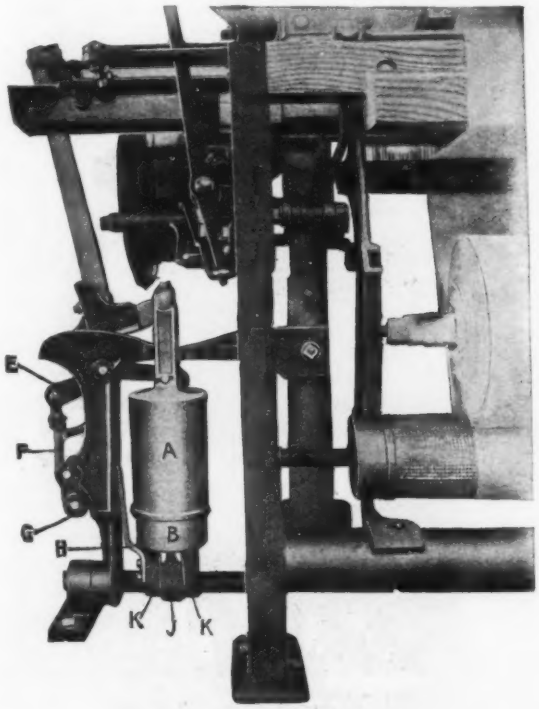


FIG. 2.

vacuum. As the cylinder, A, rushes downward the shuttle is thrown.

The vacuum in the cylinder is self induced; there are no pipes nor pumps, or apparatus other than the illustrations show. The cylinder and piston are an easy sliding fit; any air leakage into the vacuum is discharged at the end of each stroke through a one-way clap valve. As cylinder, A, approaches the point where the head of the cylinder would strike the head of the piston, a small amount of air is entrapped between them. This air forms a perfect elastic cushion, preventing the metals from coming into actual contact. It is thus impossible for the head of the piston to strike the head of the cylinder. The working of the cylinder and the piston may be easily understood by observing the operation of the vacuum dashpots employed on Corliss engines for the last fifty years. The action of an ordinary vacuum pump or of the air check on a door will also assist in understanding the Yarbrough vacuum principle.

This description of the operation of the Yarbrough pick motion will enable the reader to understand the following claims made for this device: A loom fixer can attach the Yarbrough motion quickly and easily without injury to the loom. The

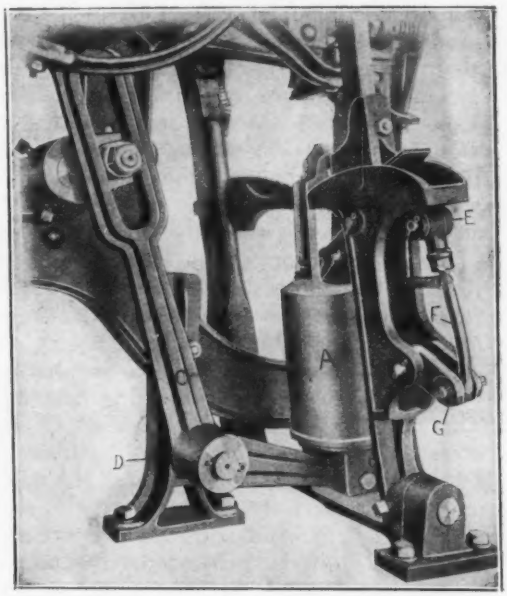


FIG. 3.

vacuum in the cylinders acts as a perfect brake. The loom cannot turn over after the belt is thrown and can only stop with shades open and in correct position for immediately restarting. This makes the weaver's work on broad looms as easy as on narrow ones. Women may be employed on such looms where the work is not too heavy for female operatives.

The shuttle cannot stop in the warp. The action of the vacuum is similar to that of an air gun. It is independent of the loom

speed; every stroke of the picker is of the same power; if the loom is turned over a single time the shuttle is thrown with the same force as when the loom is running at top speed. When the loom stops the vacuums are closed. This makes impossible the throwing of the shuttle by any movement of the lay while the weaver is picking out. Fig. 2 shows the normal position of the picker stick when ready to receive the shuttle. As the shuttle enters the box the picker is forced outward some two inches; thus is produced a perfect shuttle check.

The cylinder, A, Fig. 1, at the end of its downward stroke comes to rest on a cushion of air, the most elastic substance known. This largely eliminates the noise of the pick motion and eliminates wholly and completely the vibration of the loom caused by the picking blow of the old pick motion. The loom vibration is, in fact, so slight that an eight-inch quill will stand indefinitely on the frame of a running loom equipped with the Yarbrough invention.

The power for throwing the shuttle is gradually stored up for one side of the loom through a half revolution of the shaft and for the other side through the remaining half revolution. This results in a smooth, even loom motion; the pull on the driving belt remains constant, eliminating belt slip. The power consumed for picking is decreased, not being applied like the blow of a hammer as in the old method. The driving blow against the shuttle is the elastic pressure of air. It begins softly, gradually increasing until the pressure of the picker against the shuttle is greatest as the shuttle leaves the picker at the end of the stroke. In effect, this pushes the shuttle instead of striking it. The result is a straight line motion without wobbling. The shuttle meets the picker always at the same point, reducing both shuttle and picker wear. Through a single adjustment the force of the picking blow may be varied from the softest to the strongest. Thick and thin places are eliminated through stopping the loom against a cushion of air as soon as the filling fork acts.

It is stated that the Yarbrough motion will operate at a speed of 300 picks per minute. It can be attached to old looms. The motion may also be operated through a bell crank lever, Fig. 3. In this connection the bell crank lever, C, is rocked by a crank attached to the cam shaft and is supported on the casting, D.

Further information can be obtained on application to the manufacturers.

THE PEERLESS-V-BELT

This belt, which is manufactured by the Peerless-V-Belt Co., Monadnock Bldg., Chicago, Ill., is in extensive use in many industries, including textile mills. It consists

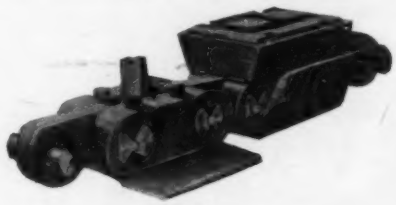


FIG. 1.

of a bevelled steel chain for a core, a sectional strip of Krome tan leather, or treated canvas, from below, and a sectional strip of friction board for the top, all parts being

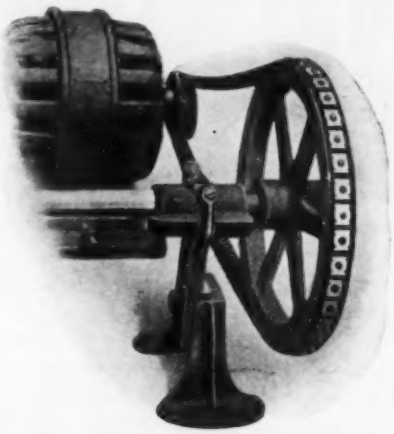


FIG. 2.

firmly rivetted together. The construction, which is shown at Fig. 1, is such that the friction material can bend around small sheaves without injuring the fibers. This makes the chain and friction material of equally long life. The joints of the chain are frictionless and designed so that the

bearing surfaces of tool steel roll against each other and require no lubrication.

Among the important features of the Peerless-V-belt are the following: They are noiseless in operation and can be run at high speeds on short as well as long centers. They are clean, owing to the fact that no lubrication is required. They can be operated with very large speed ratios. Slipping is prevented by reason of the wedge shape. They can be run very slack so that the pressure on the bearings is reduced to a minimum. The belts are not affected by moisture, dust or grit and can be operated singly or in multiples to suit any width desired. The number of strands depend upon the horse-power to be transmitted.

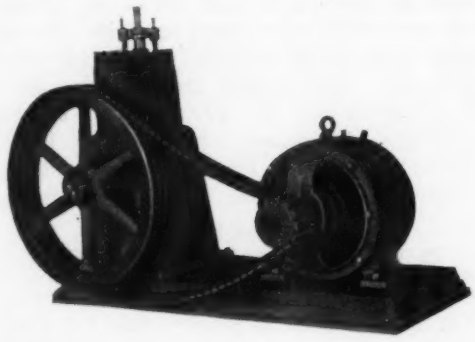


FIG. 3.

The value of the Peerless-V-belt drive as a power saver has been thoroughly demonstrated on pumping equipment. For boiler feed pumps, house supply pumps, brine circulating pumps, etc., where machines are started automatically, this saving shows up very advantageously as compared with flat belt drives. On account of there being no slip it requires a shorter time to fill the boiler, which in turn means less power consumed. Test readings have been made in a number of plants and all show practically 10 per cent. saving, or enough to pay for the drive inside of one year operation.

The manufacturers of this belt make a specialty of textile mill equipment and are confident that they can effect a large saving in space and power as compared with the ordinary methods of power transmission. Fig. 2 shows the Peerless-V-belt driving a sewing machine line shaft. Fig. 3 shows an air compressor with this belt drive. The Peerless-V-belt drive is especially adapted for electric generators, motors, fans, pumps, blowers, air compressors, textile machinery, line shafting, elevator pumps, gasoline engines and power driven sewing machines.

THE "SNAP" DETACHABLE BELT FASTENER

The illustrations show a belt fastener which possesses advantages that will be readily recognized by those familiar with the care of belts. This fastener is manufactured by the Snap Detachable Belt Fastener Co., 301 Market St., Newark, N. J. A separate plate is fastened to each end of the belt and the ends are then connected by means of a sleeve, both plates and the sleeve being shown at Fig. 1. The manner in which the connection is made is clearly illustrated at Fig. 2, which shows a belt on a portion of a pulley. The joint is flexible and strong. The fastener can be easily applied, no tools being required except a hammer. As both the plates are interchangeable the belt can be shortened at either end. The fasteners can be adapted to overhead belts at the bench and the belts then put back instantly, thus avoiding all work on stepladders. The fastener fits any pulley, locks automatically and can be used on all kinds of belting.

FIG. 1.

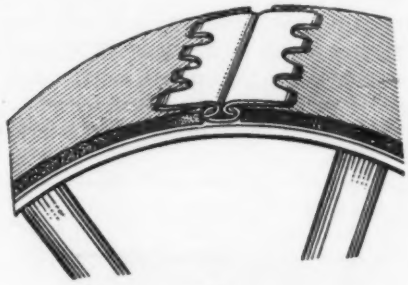


FIG. 2.

THE JENNINGS PATENT DABBING BRUSH

BY JOHN BROWN

Although very similar in appearance to other sectional dabbing brushes which have been previously patented, this one differs in having the heel part of bristle block made of aluminium less than half the thickness of ordinary wood block. In shape the bristle

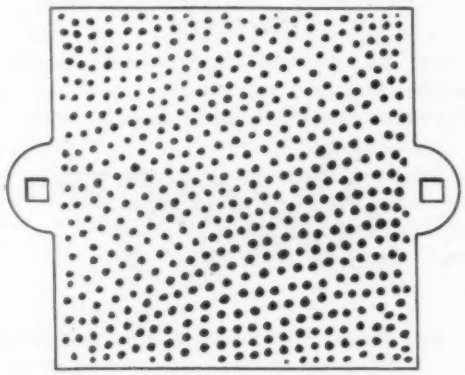


FIG. 1.

part is a perfect square. The plate is slightly swelled at the sides to allow for the bolts which fasten it to the top part of brush.

One of the chief features is that instead of sending the brush to be repaired after it becomes worn, the overlooker can himself reverse the plate, thus practically bringing a new brush over the tangent of the circle.

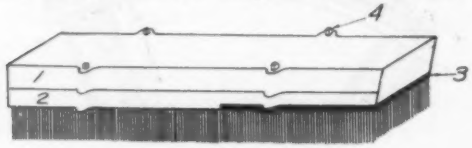


FIG. 2.

The patentees claim that the adoption of their invention will reduce the ordinary brush bill by one-half, because one of the weak spots in the old brush is that owing to the frequency of repairing, the wired back of the brush is chipped away.

Another important feature is that the bristles are extra full and firm. This result is brought about by the intersection of drilled holes in the aluminium segment. In the old style they are drilled in parallel order causing a space between each row. In the new brush there is no possible space in any direction. This brings about a more regular and even dab, and more weight can be used in the metal section of the brush. Hitherto an extra depth of hole has been necessary in wood. This bristle wasted in the hole is now utilized. The saving of time now taken in changing brushes results from: Holes in the intersecting plan; extra length of bristle used. When both sides of plate are worn, the brush is repaired, making it equal to a new one. The bolts obviate any possibility of the back flying off. This difficulty is always possible under the old style, through the screw holes being apt to strip. Several large firms in the Bradford district who have given this patent a trial are equipping all of their combs with it. Fig. 1 shows the top side of the aluminum bristle block; Fig. 2 shows the complete brush. The shaded part is the aluminium block.

CLOTH TRADEMARKING MACHINE CHANGES HANDS

It has just been announced that the Parks & Woolson Machine Co., of Springfield, Vt., have acquired the exclusive right to manufacture and sell the Robert Baird selvage printing machine hitherto marketed by the inventor, Robert Baird, of 66 Leonard St., New York City. The taking over of this machine by these well known manufacturers of cloth finishing machinery is good evidence of its great merit. In the few years it has been on the market, this cloth trademarking process has been adopted by many large and prominent firms.

The Baird process is fully covered by patents. It operates on the stencilling principle and puts a mark on the selvages of all kinds of fabrics. Attractive imprints in any color and without soiling or striking through are assured. Legibility, rapidity and permanency are also its strong points.

It is the intention of the new builders to combine their line of packaging and measuring machine with this process so that mills can measure, double, wind or roll in the same operation with the Baird method.

The Parks & Woolson Machine Co. now

offer three ways of trademarking: Kaumagraph transferring by machinery; the Baird stencilling process; and the New York fabric marking by direct printing.

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TARIFF REVISION AND ATTACKS ON BUSINESS

From an address by Wm Whitman before the Merchants' Association, North Adams, Mass.

We have just entered upon a new year. Our country is blessed with plenty. Mother Earth, the source of man's sustenance and physical comfort, has yielded abundantly. Nature has done all that could be hoped for to contribute to contentment and happiness. The nation is at peace with all the world. Notwithstanding these blessings our people do not appear to be either contented or happy. The blessing of peace among ourselves, which perhaps is the greatest of all blessings, appears not to be with us. I fear there are many of us almost ready to exclaim with the moody prince of Denmark: "The time is out of joint; Oh, cursed spite, that I was ever born to set it right."

I shall not attempt in this short address even to enumerate, much less discuss, the many troubles —whether real or imaginary—that contribute to the unrest and discontent of the day. From what I know of the history of the human race it seems clear to me that the times have always been out of joint, and I feel that in the future they will continue to be out of joint. Let me quote the language of Daniel Webster, almost 80 years ago, in describing conditions in Massachusetts and throughout the country in his day:

> There are persons who constantly clamor. They complain of oppression, speculation and pernicious influence of accumulated wealth. They cry out loudly against all banks and corporations and all means by which small capitalists become united in order to produce important and beneficial results. They carry on mad hostility against all established institutions. They would choke off the fountain of industry and dry all streams. In a country of unbounded liberty they clamor against oppression. In a country of perfect equality they would move heaven and earth against privilege and monopoly. In a country where property is more evenly divided than anywhere else they rend the air shouting agrarian doctrines. In a country where wages of labor are high beyond parallel they would teach the laborer he is but an oppressed slave.

These same cries are repeated today. Unrest appears to be a condition precedent to advancement. It is an element in the process of evolution and the human family is but following the footsteps of nature. I am sure the problems of the present are no more difficult of solution than those of the past. From the struggles of men who have lived, better things have come to us These experiences should teach us that out of present struggles higher good will come. Whatever difficulties now confront us we must meet them as men, with patience, faith and fortitude.

I purpose to address you upon certain phases of the violent and persistent attacks upon the wool manufacturing industry. These attacks have been as varied in character as they have been violent. It seems as if there had been an epidemic of virulence toward the wool manufacture The attacks have been made not only by open foes but by supposed friends. They have been joined in by the chief magistrate of the nation, while openly admitting ignorance; by a President-elect in language that did not require such admission; governors, legislators, senators, congressmen and politicians without regard to party have joined in the attack. Many of them had their origin in ignorance, hatred, malice or selfishness. Demagogues have joined in by playing upon the passions of men.

It is commonly believed that the Payne-Aldrich tariff law very largely increased the duties on woolen goods over those of the previous law and this belief has prejudiced the uninformed against it. The belief, however, is unwarranted. There was no increase. On the contrary there was a slight reduction. It is charged that the protective duty to woolen manufacturers is about 100 per cent. While the duty imposed upon the manufactures of wool that are imported averages over 90 per cent. of the foreign price it is not true that the whole of this is a protective duty to the manufacturer. The specific duties which are included in the equivalent ad valorem rate mentioned are about one-half, in many cases more than one-half, of the whole duty and these specific duties are not protective but are compensatory, being imposed to offset the duty on the raw materials used in the manufacture of wool in order that the American manufacturer may be placed upon even terms with his foreign competitor whose raw material is free. The United States is the only great manufacturing country in the world which levies a duty on raw wool. These facts have been stated so often over a long period of years that it seems strange they are so little known and when known so often ignored. Very few men outside of or even engaged in the woolen manufacture have a realizing sense of how much the manufacture is handicapped by the duty imposed on its chief raw material—wool. The amount of the duty, however, is only a part of the handicap arising from its imposition. It would not be possible on an occasion like this for me to elaborate the full nature and burden of this handicap, but I will make a simple statement that may be enlightening.

In 1901 a Corporation with which I am connected bought South American cross-bred wool at 4 1/4 pence (equal to 8.63 cents) landed in Boston. This price was equivalent to 4 pence per pound or 8.12 cents at the port of shipment. The duty on this wool was 11 cents per pound, equivalent to 135.46 per cent. on the foreign value. These same wools have since advanced in price to about 14 pence landed in Boston. This shows the great fluctuation in value that has taken place and also how much the equivalent ad valorem rate is affected by these changes of price. The specific duty is the same now as it was then, but the in-

creased price of the wool has reduced the ad valorem to 40 per cent. from 135.46 per cent. These raw wool duties have not been asked for by wool manufacturers. On the contrary, if their own interests only were to be considered they would prefer to have wool free Congress, however, has imposed a duty on the raw wool for the encouragement of sheep husbandry as a national utility, and has attempted to compensate the wool manufacturer for these duties. While wool manufacturers would prefer free wool they have not made a demand for it. In this they have been consistent. They contend, however, in addition to the protective duty, for a full compensatory duty, that shall be the equivalent of whatever duty may be imposed on wool.

Perhaps the most important charge made against the wool manufacturers is that because of these alleged existing duties they have been beneficiaries of the government and have acquired great wealth through abnormal profits at the expense of those engaged in other industries. I deny most emphatically the truth of this charge. I assert—and the assertion is capable of absolute proof—that the woolen industry of this country has been less profitable during the last twenty-five years than other industries. Full evidence that the charge is not true has from time to time been presented to the committees of Congress.

I have grave doubts as to whether the evidence was ever read or even wanted by the committee. It certainly never reached the public, although printed in the committee's reports. It was not wanted by sensational writers. The fact is that other considerations than the truth were dominant at that time.

The wool manufacture which suffered an acute depression at the close of the civil war received the impetus which has made it one of our great national industries from the tariff of 1866. In all essential features the woolen tariff is the same today that it was then. The following year, at the age of 24 years, I was elected treasurer of the Arlington Mills Corporation, which was then building a small mill to replace one which had been destroyed by fire a few months earlier. This connection has been continued in different capacities up to the present, with the exception of about six months in 1869. I resigned in June, 1869, and returned in December of the same year. In the meantime the corporation became practically insolvent but was rehabilitated by its stockholders contributing new money to the amount of the entire capital stock. This is but one of very many similar experiences. There are only a few left of the men who were at that time actively engaged in the wool manufacturing business. I can recall only five. Therefore, the wool manufacturers of today are in no way responsible for the policy established by that law. In looking back over these many years I see a path strewn with the wrecks of woolen mills, both large and small, corporations as well as firms and individuals. I can remember very many of them, but not all. Statistics of such are not accessible in any tabulated or concrete form. The number of them is astounding. At times I wonder that so great a national industry can have been established through so many vicissitudes of fortune.

Great fortunes have not been made in the wool manufacture. They are not to be found among those now engaged in it. In calling to mind all the wool manufacturers I have known I cannot remember one of great wealth. There have been some who have amassed what might be called moderate fortunes, but the number is insignificant compared to those who have been unsuccessful. Fortunes are greatly magnified. Every time you add a zero to the right of a number you multiply it ten times, so that a fortune of $100,000 can be made a million by adding nothing to it, or raised from one million to ten million by adding nothing to it, and that is about the way fortunes are only too commonly estimated.

In Berkshire County in the year 1884 there were eighteen woolen mills in operation. From that year until the present time but two additional woolen or worsted mills have been organized. One of these went into bankruptcy in 1909. Of the eighteen mills running in 1884 but four are still under the same managements and seven are now used for other purposes. Of the fourteen which have changed managements all have failed or have been recapitalized or reorganized. Four during that period have been under four different managements, one under three different managements and five under two different managements.

This brief bit of local history certainly does not indicate any extraordinary opportunity for profits in the business, and shows clearly the sharp competition under which the industry has had to be conducted. Where keen competition exists there cannot be excessive profits. The woolen manufacture in this country is on a competitive basis of the keenest nature and in view of the severity of this competition, how disastrous would be such low rates of duty as would add to domestic competition that also of foreign goods, made under entirely different economic conditions.

If existing rates of duty are reduced to a point that will admit of increased importations the benefits to the public are doubtful, but there is no doubt that such increased importations would displace American products and diminish the volume of domestic business. Such conditions could not fail to bring about grave disaster to our Commonwealth.

Only those who are engaged in the active conduct of the textile industry can have any conception of the demoralizing effect upon all the workers therein, without regard to their position or the nature of their work, which is produced by this constant agitation and ever increasing investigation by civic authorities and by self-constituted organizations, composed of people actuated by all kinds of motives, yet possessed of neither fitness nor training for industrial investigation. It breeds discontent, dissatisfaction and unhappiness. It is discouraging to good, honest, faithful work and impairs beyond the power of language the efficiency of labor, and by labor I mean to include all kinds. How much better things would be if men were governed by the spirit of the following lines of Jean Ingelow:

"I am glad to think
I am not bound to make the world go right
But only to discover and to do,
With cheerful heart, the work that God appoints."

These assaults upon the woolen industry are

calculated not to build up but to destroy, to drive competent men to other employments, to make the business so unprofitable and so unsatisfactory and so disagreeable that the younger generation will have nothing to do with it. In a single night the work of centuries can be destroyed. Disastrous legislation can wipe out an industry in a day as fire destroyed in our day the vast properties of Portland, Boston, Baltimore, Chicago and San Francisco.

I dissent from Mr. Wilson's characterization of American business men and equally so from his opinion in regard to the influence of the tariff upon the character of business men. We woolen manufacturers are characterized as "tariff beneficiaries" and as men who are timid and fretful and cringing for government support. Our industry is classed as a "protected industry," and differentiated from other industries which are classed as "unprotected industries." These errors must be eradicated from the minds of men in high places and their followers, before our true relations with the great army of workers and upbuilders of our country can be comprehended and appreciated. We are not tariff beneficiaries; we never have asked and never have been granted special legislation for our interests. We never have been, we are not, we would not be if we could, on the charity list of our country. And as a corollary to this, that woolen manufacturers are favored by legislation above others, whereby they acquire riches, receiving tribute from those engaged in so-called non-protected industries, I assert that the so-called non-protected industries are the only absolutely protected industries in our country. This is by reason of geographical position. I also assert that the so-called protected industries are only partially protected, and because of this capital and labor in the latter are less remunerative than in the former. These fundamental errors of which I am speaking have been so instilled into the public mind by doctrinaires and theoretical economists that they have become altogether too generally accepted as truth. Because they are vouched for by prominent men they are all the more dangerous.

Not as men "timid, and fretful, and full of alarms," but as resolute, courageous men who have embarked their fortunes in an honorable and useful industry, we resent the attacks on American manufacturers and American business, and appeal with confidence to the justice and judgment of the American people. There are clouds overhead, and difficulties and dangers beset us, but injustice works its own cure, and right, not wrong, will ultimately triumph.

It has been the policy of our country from its beginning to develop its natural resources. The interdependence of our national industries has been recognized. There have been no limits to the field of our activities other than those created by nature. Any industry in which a unit of labor will produce as much in this country as in a foreign country has been considered worth cultivating. The greatest possible diversity of products has been regarded as beneficial to the nation's welfare. Legislation to accomplish these objects must necessarily have a basic principle. This principle is to impose such duties on certain imported competing products of foreign labor as to prevent their importation at a less price than they could be profitably manufactured for in our own country under the wages of labor and other economic and social conditions which may prevail.

It has been the policy of our country so to legislate that such industries as can be successfully carried on within our borders shall be transferred from foreign countries to our own country. This policy has resulted in making our country the largest manufacturing nation in the world. Our industry under this policy has kept pace in development with others. It is an essential part of the industrial equipment of the country. We especially deprecate the assaults upon the textile industries. Legislation that would cripple them or make them relatively less prosperous than others would be class legislation for the alleged purpose of favoring the interests of other and absolutely protected industries.

We ask no favors but we may demand as a right that the woolen industry shall have equal opportunities with all other industries. Those in other industries cannot reasonably expect that those engaged in the woolen industry, only a partially protected industry, should have a special mission to furnish materials for their clothing without reasonable and proper profits, a profit relative to that secured by other industries, however they may be classed.

FACTS AND GOSSIP.

California, Los Angeles. The Olympia Cotton Mill of California has been chartered with authorized capital stock of $2,500,000 to build a mill at San Pedro. M. W. and C. W. Durham and C. M. Hamberg, all of this place, are the incorporators.

California, Los Angeles. A local report states that negotiations are under way for the establishment of a woolen mill at Riverbank.

Canada, Ontrio, Gananoque. It is reported that N. A. Booth, formerly of Brooklyn, N. Y., has purchased a factory property here, and will equip it to manufacture felts.

Canada, Quebec, Chambly Canton. Willett's Ltd. will not rebuild their plant which was burned in December, 1911. They are utilizing part of their 1000 h. p. supplying the town with light and water and have leased the old cotton mill building with 375 h. p. to men from the United States who have formed a company under the style of the Canadian Leather Board Company, Ltd., and are soon to begin manufacturing. Willett's Ltd. will not be dissolved but will not engage in woolen manufacturing again.

Canada, Montreal. In addition to merging the Smart Bag Company, Ltd., Woods, Ltd., and acquiring the controlling interest in the new Empire Cotton Mill, Ltd. at Welland, the new Smart-Woods, Ltd. has acquired the controlling interest in the Renfrew Knitting and Woolen Mills at Renfrew, Ont.

Canada, Quebec, Coaticook. Some changes are to be made in the ownership of the Coaticook Woolen Mills Co. P. H. Armitage and Edgar Tafe are the proprietors.

Personals

Charles F. Broughton has been appointed superintendent of the Bennett Mills, New Bedford, Mass. He formerly held the position of superintendent of the weaving department at the Amoskeag Manufacturing Co., Manchester, N. H.

Mayor T. M. Russell of Middletown, Conn., has been elected treasurer of the Russell Manufacturing Co., to succeed E. Kent Hubbard, Jr.

M. Robert Weichert, superintendent of the Patrick Duluth Woolen Mill, Duluth, Minn., was presented with a beautiful gold watch and chain, with inscription thereon with the names, from the employes of the Patrick Duluth Woolen Mill, Jan. 1, 1913.

James H. Lawler, overseer of finishing at the Middlesex Co., Lowell, Mass., has resigned to accept a similar position at the Sterling Mill, same city.

M. J. Lannon has been appointed overseer of finishing at the Middlesex Co., Lowell, Mass. He comes from the Felters Co., Millbury, Mass.

Frank A. Hardy, overseer of finishing at the Sterling Mill, Lowell, Mass., has severed his connection with that company.

Charles Robinson has been appointed superintendent at one of the B. B. & R. Knight Co.'s mills in Rhode Island. He was formerly boss carder at the Lancaster Mill, Clinton, Mass.

Clyde I. DeMars has been appointed overseer of spinning at the Clinton Woolen Manufacturing Co., Clinton, Mich. He was formerly employed at the Mianus Manufacturing Co., Coscob, Conn.

George A. Davis, formerly overseer of mule spinning at the Valley Queen Mill, River Point, R. I., succeeds William Houston as overseer of the mule spinning at the Warwick Mills, Arctic, R. I.

Herbert V. Martin has accepted the position of superintendent of Mill C of the Greylock Mills, Williamstown, Mass. He was formerly employed for the I. E. Palmer Co., Middletown, Conn.

Wallace E. Stoddard, superintendent of Mill C of the Greylock Mill, Williamstown, Mass., has been elected secretary for William B. and Charles B. Plunkett, well known cotton manufacturers. He will have his headquarters at the office of the company at Adams, Mass. Mr. Stoddard has been connected with the mill at Williamstown for a number of years and previous to that time he was employed at the Arnold Print Works.

E. J. Pray has accepted the position of overseer of spinning at the Waypoyset Mill, Central Falls, R. I. He was formerly in charge of the spinning at the U. S. Cotton Co., but more recently at Taunton, Mass.

James F. Mabbett of George Mabbett & Sons Mill at Plymouth, Mass., has taken charge of the New York office as permanent manager.

Joseph Dumas, wet finisher at the Stillwater Worsted Co., Harrisville, R. I., has resigned to accept a similar position with the Lymansville Co., Lymansville, R. I.

William Houston, for over five years overseer of mule spinning at the Warwick Mill, Arctic, R. I., has severed his connection with that company and will take up his home in California.

Thomas J. Jennings has accepted the position of overseer of finishing at the Kent Manufacturing Co., Centreville, R. I. He was formerly employed at the Belle Vue Mill, Clinton, Mass.

Albert H. Walker has accepted the position of second hand in the mercerizing and bleaching departments at the Standard Bleachery Co., Carlton Hill, N. J. He was formerly employed at the Mansfield Bleachery, Mansfield, Mass.

Stephen D. Bennett has been appointed superintendent of G. H. Tilton & Son's mill at Savannah, Ga. He formerly held a similar position at the Booth Manufacturing Co., New Bedford, Mass.

R. B. Kennedy has been promoted from the position of cashier to assistant to the general manager at the Waxahachie Cotton Mills, Waxahachie, Tex.

D. A. Graham has been appointed superintendent of the Springfield Cotton Mill, Laurel Hill, N. C.

J. H. McEntire, overseer of spinning at the Phoenix Mill, Kings Mountain, N. C., has resigned to accept a similar position at the Loray Mills, Gastonia, N. C.

W. E. Tisdale has been appointed superintendent of the Magnolia Mills, Charlotte, N. C.

R. F. Gardner, superintendent of the Magnolia Mills, Charlotte, N. C., has resigned to accept a similar position at the Buffalo Mills, Stubbs, N. C.

L. C. Martin has accepted the position of overseer of carding at the Beaumont Manufacturing Co., Spartanburg, S. C. He was formerly employed at the Lydia Mill, Clinton, S. C.

Arthur Kitchens has succeeded J. W. Jenkins as overseer of weaving at the Putnam Mills, Eatonton, Ga. Mr. Kitchens comes from Scottdale, Ga.

L. T. Sanford has accepted the position of overseer of spinning and twisting at the Athens Manufacturing Co., Athens, Ga. He comes from Laurinburg, N. C.

J J. Kennett has accepted the position of overseer of weaving at the York Cotton Mill, Yorkville, S. C. He was formerly employed at the Saxon Mill, Spartanburg, S. C.

At a meeting of the directors, Louis R. Kerr, assistant treasurer of the Butler Mill, New Bedford, Mass., was appointed agent and Morgan Butler was elected assistant treasurer.

George Snell has been appointed overseer of carding at the Indian Spring Mill, American Woolen Co., Madison, Me. He was formerly second hand at this mill and succeeds Thomas C. Scott.

Warren W. Bonney has accepted the position of overseer of mule and frame spinning at the Hebron Manufacturing Co., Dodgeville, Mass., succeeding John Riley.

Benjamin Horsfall has secured the position of overseer of dyeing at the H. T. Murdock & Co., Proctorsville, Vt., succeeding A. E. Jones.

William Stoppard, general manager and buyer of the Warwick Lace Works, River Point, R. I., has severed his connection with that company, having been in their employ since its organization.

Oswald C. Drechsler has been appointed agent of the Assabet Mills, American Woolen Co., Maynard, Mass. He succeeds Wm. M. Lasbury. Mr. Drechsler has been one of the superintendents at the Assabet Mills for many years.

Thomas W. Metcalfe, overseer of the finishing department at the Dunham Hosiery Co.'s No. 2 Mill, Poquonock, Conn., has severed his connection with that company. Mr. Metcalfe has held this position with this company for the past twenty-five years.

Albert E. Deacon, who has had charge of the finishing and starching department of the Southbridge Printing Co.'s plant, has severed his connection with that company.

Simon Berthiaume, for the past four years overseer of the spooling department at the French River Textile Co., Mechanicsville, Conn., has resigned.

Frederick Whittaker, general superintendent of the American Printing Co., Fall River, Mass., has resigned on account of ill health.

Joseph Caldwell, for seventeen years superintendent of weaving at the King Philip Mill, Fall River, Mass., has been appointed general superintendent of the Booth Manufacturing Co., New Bedford, Mass.

William M. Butler, president of the Butler, New Bedford Cotton and Quisett Mills of New Bedford, Mass., and the Hoosac Cotton Mills of North Adams, Mass., has been elected president of the Soule Mill, New Bedford, to succeed the late Rufus A. Soule.

W. M. Buckley, overseer of weaving at the Iroquois Mill, Saugus, Mass., has severed his connection with that company.

Paul E. Meissner has been appointed general manager of the Elmville Worsted Co., Elmville, Conn. He was formerly employed at the Stillwater Worsted Co., Shelton, Conn.

James H. Sanders, who has been connected with the Southbridge Printing Co., Southbridge, Mass., has severed his connection with the printing company although retains his interest in the business as clerk and stockholder.

Fergus Ferguson, superintendent of the White Rock Mill, B. B. & R. Knight Co., White Rock, R. I., has severed his connection with that company and is succeeded by C. M. Robinson. He comes from the Lancaster Mill, Clinton, Mass.

W. E. Chamberlin, overseer of finishing at the Bellevue Mill, Clinton, Mass., has severed his connection with that company.

John F. Crocker has accepted the position of bookkeeper at the Earnsdale Worsted Mill, Clinton, Mass.

Martin Harding has accepted the position of overseer of carding at the Bellingham Woolen Co., North Bellingham, Mass. He was formerly employed at the Faulkner Manufacturing Co., North Billerica, Mass.

J. P. Goodrow has accepted the position of overseer of weaving at the Franklin Mills Corporation, Unionville, Mass. He comes from Webster, Mass.

John H. Arran has accepted the position of overseer of finishing at the Faulkner Manufacturing Co., North Billerica, Mass.

William Taylor has accepted the position of overseer of weaving at the Iroquois Mill, Saugus, Mass. He comes from Wilton, N. H.

George Shield, superintendent of the Henry F. Scatchard Manufacturing Co., Norristown, Pa., has severed his connection with that company.

Samuel Dean has accepted the position of overseer of weaving and assistant superintendent at the Esmond Mill, Esmond, R. I. He was formerly employed at the Jenks Spinning Co., Pawtucket, R. I.

Richard H. Fish, overseer of weaving and assistant superintendent of the Esmond Mill, Esmond, R. I., has severed his connection with that company.

G. E. Bubb has accepted the position of overseer of carding and spinning on the night shift at the Swansdown Knitting Co., Hudson, N. Y. He was formerly employed at the Utica Knitting Co., Clayville, N. Y.

Martin O'Toole has accepted the position of overseer of finishing at the Bellevue Mills, Clinton, Mass.

Ernest Adams, second hand in the weaving department at the Esmond Mills, Esmond, R. I., has resigned.

J. S. Stroud has been appointed superintendent of the Lauerdale Mills, Meridian, Miss. He was formerly employed at the Holt-Morgan Mfg. Co., Fayetteville, N. C.

A. F. Ball has been promoted from overseer of carding and spinning to superintendent of the Watts Mill, Liledoun, N. C.

E. C. Fleming, superintendent of the Kosciusko Cotton Mills, Kosciusko, Miss., has resigned to accept the position of overseer of spinning at the same mill.

T. A. Shipp, Jr., superintendent and manager of the Tifton Cotton Mills, Tifton, Ga., has been appointed superintendent of the Piedmont Cotton Mill, Atlanta, Ga., also. He will continue in both offices.

J. H. Arnold, for the past year second hand at the Bibb Mfg. Co., Porterdale, Ga., has been transferred to the Payne Mill, Macon, Ga., where he will have charge of the carding, succeeding J. J. Elliott.

W. A. Riddle, who has been designer at the Watts Mill, Laurens, S. C., has been made overseer of weaving, succeeding J. T. Tidwell.

David C. Jones has accepted the position of designer at the Watts Mills, Laurens, S. C., succeeding W. A. Riddle.

J. W. Norket has accepted the position of overseer of spinning at the Albion Mills, Mt. Holly, N. C. He was formerly employed at the Woodlawn Mills, same place.

W. D. McCombs, formerly overseer of spinning at the Pomona Mills, Greensboro, N. C., has been appointed superintendent of the Cohannett Mills, Fingerville, S. C.

W. J. Oates, overseer of spinning and spooling at the Thomaston Cotton Mills, Thomaston, Ga., has resigned to accept the position of superintendent of the Georgia Manufacturing Co., Gainesville, Ga.

D. G. Wallace, overseer of dyeing at the Eagle & Phenix Mills, Columbus, Ga., has resigned to accept a similar position at the Stonewall Mills, Stonewall, Miss.

C. K. Taylor has been promoted from superintendent to manager of the Selma Manufacturing Co., Selma, Ala.

J. B. Richmond has been elected president of the West Point Manufacturing Co., West Point, Ga., to succeed the late W. A. Bullard.

R. C. Roberts, superintendent of the Columbia Cotton Mills Co., Columbia, Tenn., has resigned to accept a similar position with the Ashcraft Cotton Mills, Florence, Ala.

H. E. Wadely has been appointed manufacturing agent of the Bigelow Carpet Co. for both mills belonging to the corporation, Clinton and Lowell, Mass. Mr. Wadely succeeded Paul T. Wise about two years ago.

M. H. McEvoy, overseer of dyeing at the Great Falls Woolen Co., Somersworth, N. H., has resigned to accept a similar position in Camden, Me.

Edward Forbes, overseer of the bleaching department at the Stevens Linen Works, Webster, Mass., has resigned. He is succeeded by Edward Chambers, formerly boss bleacher for the East Village mill of the S. Slater & Sons.

John F. Maguire has accepted the position of overseer of finishing at the Sayles & Jenks Mfg. Co., Warren, Mass. He comes from Blackstone, Mass.

G. W. Haselton, superintendent of the Pittsfield Mills, Pittsfield, N. H., has been appointed agent of this company and also the Exeter Mfg. Co., Exeter, N. H.

Robert Kent has been appointed superintendent of the Pittsfield Mills, Pittsfield, N. H.

Samuel Robidoux has been appointed overseer of spinning at the Garland Woolen Co., Staffordville, Conn. He comes from Moosup, Conn.

J. S. Clancy, overseer of finishing at the Sayles & Jenks Mfg. Co., Warren, Mass., has severed his connection with that company and has returned to his home in Camden, N. J.

James Woodhouse has accepted the position of overseer of carding at the Jefferson Mfg. Co., Jefferson, Mass. He was formerly employed at the Windham Mfg. Co., South Windham, Me.

John Moriarty has accepted the position of superintendent of the Raritan Woolen Mill, Raritan, N. J. He was formerly designer at the Burlington Mill, Winooski, Vt.

Joseph T. Mahon has accepted the position as overseer of weaving at the Henderson Rubber Co., Baltimore, Md.

Chester D. Hatch, agent of the Exeter Mfg. Co., Exeter, N. H., also agent of the Pittsfield Mills, Pittsfield, N. H., has been promoted to the position of treasurer of these mills.

Frank Austin has reentered the employ of the Namquit Worsted Co., Bristol, R. I., as overseer of dyeing. He was formerly employed at the Plainfield Woolen Co., Central Village, Conn.

George N. Smith has been appointed overseer of carding at the branch mill of the Granite Mills, A. L. Sayles & Sons, Pascoag, R. I. He was formerly employed at Duluth, Minn.

Lewis Irons, overseer of weaving in the woolen department of S. Slater & Sons, Inc., Webster, Mass., who severed his connection with that company, was presented with a purse containing $50 in gold, and a purse containing money for Mrs. Lewis Irons. He also received a gold mounted fountain pen, Calabash pipe, tobacco pouch and a leather bill fold. The presentation was made by Andrew Walker, who expressed the regret which the overseers of the weave room felt in losing an overseer who had treated them always as near right as an overseer could possibly do. Mr. Irons responded in a few well chosen words.

Morris Miller will retire from the active management of the Great Western Knitting Co., Milwaukee, Wis., but will continue to serve as a director and will retain his financial interest in the business.

William Hinchliffe has accepted the position of assistant superintendent at the Stillwater Worsted Co., Harrisville, R. I. He comes from the Peace Dale Mfg. Co., Peace Dale, R. I.

Barney Crossman has been appointed overseer of weaving for S. Slater & Sons, Webster, Mass. He was formerly second hand at the Wood Worsted Mills, Lawrence, Mass.

George W. Jackson has been appointed overseer of ring spinning and spooling at the Shetucket Co., Norwich, Conn., succeeding John Mitchell.

John D. Eddy has been appointed superintendent of the Weetaamoe Mill, Fall River, Mass., to succeed the late William A. Wood. Mr. Eddy was formerly employed as assistant superintendent at the Fall River Iron Works Mill, same city.

Captain Charles H. Manning, for the past thirty years superintendent of the mechanical and engineering departments of the Amoskeag Manufacturing Co., Manchester, N. H., has severed his connection with that company. Illness is the cause of his retirement.

John Leary, overseer of finishing at the Aetna Mills, Watertown, Mass., has severed his connection with that company.

Harry W. Watt has accepted the position of foreman of the finishing department for the E. Turnbull Co., Galt, Ont., Canada.

J. G. Ellis has been transferred from Providence, R. I., to Louisville, Ky., where he will have full charge of the Bradford Worsted Spinning Co., recently taken over by the American Woolen Co.

Samuel McGibbon, overseer of spinning at the Yantic Woolen Co., Yantic, Conn., has severed his connection with that company.

E. J. Bourehard has been appointed superintendent of the Falconer Towel Co., Falconer, N. Y. He was formerly employed at the Niagara Textile Co., Lockport, N. Y.

Joseph Ellis, overseer of spinning at the Chester Spinning Co., Chester, Pa., has severed his connection with that company.

Leo Hammond has accepted the position of overseer of spinning at the Chester Spinning Mills, Chester, Pa. He was formerly employed as second hand at the Fuld & Hatch Knitting Co., Cohoes, N. Y.

Theo. N. Parent has accepted the position of overseer of carding at the North Adams Mfg. Co., North Adams, Mass. He comes from Franklin, N. H.

John Costello has been appointed overseer of carding at the Ashland Cotton Co., Jewett City, Conn. He comes from Grosvenordale, Conn.

Joseph McGowan, overseer of carding at the Darling Woolen Mills Co., Holliston, Mass., has severed his connection with that company.

Robert L. Dawson has been appointed superintendent of the Beaver Brook Mills, Collinsville, Mass. He formerly held a similar position with the Millers River Mfg. Co., Athol, Mass.

I. J. Edwards, who was recently promoted to the position of superintendent of the Taylor Mills, Reynolds, Ga., is now paymaster, in addition to his duties as superintendent.

C. E. Davis, formerly superintendent of the Manchester Manufacturing Co., Macon, Ga., has accepted the position of overseer of spinning and twisting at the Willingham Mill, of the same place.

D. E. Trask, overseer of carding at the Richmond Spinning Co., Chattanooga, Tenn., has resigned to accept the position of overseer of carding and combing at the Atlantic & Gulf Mills, Quitman, Ga.

E. A. Armstrong has accepted the position of night overseer of spinning at the Casswell Mill, Kinston, N. C. He comes from Mt. Holly, N. C.

L. A. Thompson, formerly superintendent of the Lakeside Mills, Burlington, N. C., has accepted a position as overseer of carding and spinning at the Holt Granite Mills, No. 1, at Haw River, N. C.

J. W. Pitts has accepted the position as overseer of spinning at the Fort Valley Cotton Mills, Fort Valley, Ga. He was formerly employed at Spartanburg, S. C.

George A. Howell, formerly employed at the Arlington Mill, Gastonia, N. C., has been appointed superintendent of the Shaw Cotton Mills, Weldon, N. C.

D. T. Evans, overseer of spinning at the Durham Hosiery Mills, Chapel Hill, N. C., has resigned to accept a position with the Erwin Mills No. 4, Durham, N. C.

A. T. Meadows, superintendent of the Thomaston Mills, Thomaston, Ga., is now also filling the position of general superintendent of the Aldora Mills, Barnesville, Ga.

Samuel H. Walker has accepted the position of overseer of mercerizing and bleaching at the Standard Bleachery Co., Cariton Hill, N. J. He was formerly employed at the Mansfield Bleachery, Mansfield, Mass.

Adolph J. Ziegler has accepted the position of overseer of spinning at the Yantic Woolen Co., Yantic, Conn. He comes from Rockville, Conn.

Abel Walls has been appointed overseer of spinning at the Forest Mills Co., Bridgton, Me. He comes from Waterville, Me.

Henry H. Veitch has accepted the position of overseer of weaving at the Pondicherry Co., Bridgton, Me. He comes from Webster, Mass.

James Priestley has accepted the position of overseer of weaving at the Forest Mills Co., Bridgton, Me. He comes from Monson, Mass.

Harry Wilson has been appointed overseer of dyeing at the East Village Mill, S. Slater & Sons, Inc., Webster, Mass., succeeding Edward F. Chambers.

W. P. Holt has been appointed superintendent of the Locke Cotton Mills Co., Concord, N. C. He formerly held a similar position at the Holt-Granite Mfg. Co., Haw River, N. C.

Charles E. Thomas, superintendent of the Pontiac Manufacturing Co., Pontiac, R. I., has been chosen treasurer of the Woonsocket Machine & Press Co., Woonsocket, R. I., to succeed the late William S. Hopkins. He was formerly employed at the Clinton Manufacturing Co., of Woonsocket and was at one time superintendent of the Globe Mill.

DEATHS.

William Tiffany Slothower, who owned and operated the Phoenix & Powhatan Cotton Mill, Baltimore, Md., for a number of years, died at the home of his nephew in that city after an illness of two months from kidney trouble. He was born in Baltimore, Aug. 31, 1840. He never married and is survived by two nephews and two nieces.

John F. Maguire, overseer of carding at the Wamsutta Mill and later with the Acushnet Mill, New Bedford, Mass., died at his home in that city at the age of 62 years. Besides a widow he is survived by six children.

Patrick Bannon, president of the Mansfield Bleachery, Mansfield, Mass., died at the age of 72 years. He is survived by a widow, three sons and one daughter. Two of the sons are in charge of the bleachery at Mansfield at the present time.

John Semple died at his home in Mt. Holly, N. J., after a five weeks' illness, from a tumor of the neck, at the age of 87 years. He was a retired silk manufacturer and some years ago was connected with several silk mills in the vicinity of Mt. Holly. He had been a resident of that place for over fifty years and was born in Scotland. Mr. Semple is survived by two children, a son and daughter.

Henry W. Boettger, founder of the silk finishing business in the United States and president of the Silk Finishing Company of America, the main office of which is on Madison Ave., New York, died from heart disease at the age of 68 years. Mr. Boettger was born at Altoma, Germany, and came to this country in 1866. Entering the silk finishing business, he built up the large enterprise of which he was the head. He was a member of the Silk Association of America, the Arion Society, the Republican Club and the New York Zoological Society. His wife, three sons and four daughters survive him.

Samuel K. Bailey, for a number of years superintendent of the Lippett Woolen Co., Woonsocket, R. I., died at the home of his son, W. Henry Bailey, in that city. He was born June 12, 1832, at Trowbridge, England and came to this country in 1843, locating in Southbridge, where he worked in the carding department. In 1866 he went to Plainville, R. I., where he was superintendent for H. C. Whipple. He afterwards became superintendent of the mill at Versailles, Conn., and the Rock Woolen Mill at Rockville, Conn. He leaves a wife, one son and a daughter.

Henry O. Drape, for forty-seven years master mechanic at the plant of the American Hair Cloth Co., Pawtucket, R. I., died at his home in that city, after an illness of about a fortnight at the age of 69 years. He is survived by his wife, a daughter, one son and two sisters.

James A. Stritch, for eighteen years an overseer in the local mills of the George H. Gilbert Manufacturing Co., Gilbertville, Mass., died at his home in that city at the age of 54 years, after an illness of two years with a tumor on the brain. He is survived by a widow, two sons and two daughters.

John C. Edwards, the head of the firm of Edwards, Heard & Smith, patent lawyers and attorneys of Boston, long known as Crosby & Gregory, died at his home in Brookline very suddenly on January 21. Mr. Edwards had a wide reputation as a patent lawyer and had made a specialty of textile cases. Aside from his legal practice, Mr. Edwards had various business interests and was treasurer of the Sterling Knit Goods Company, treasurer of the Pinkham Manufacturing Co., and director in a number of other Massachusetts corporations. He was born in New Castle, Del., in 1864 and after completing his professional education he went to Washington, D. C., where he opened a patent law office, coming to Boston in 1892 to become a member of the old firm of Crosby & Gregory, which connection continued for twenty years. They have done the patent work for some of the largest textile machinery concerns. He is survived by his wife and two sons.

James Coats, a director of the J. & P. Coats Co., Ltd., thread manufacturers, Pawtucket, R. I., died at the Garrick House, Ayr, Scotland, at the age of 79 years.

Charles H. Richardson, Jr., for several years superintendent of the Shove Mill, Fall River, Mass., and widely known in textile circles, died suddenly on December 29 of apoplexy at his home in that city. Mr. Richardson was born in Lowell, Mass., forty-five years ago and came to the Shove Mill from the Globe Yarn Mill six years ago. He is survived by a widow and one daughter.

Albert Earl Stephens, senior member of the hide and wool firm of A. E. Stephens & Co., Denver, Colo., and also an active member of the Chamber of Commerce, died at the St. Joseph hospital, December 27, of pneumonia after an illness of nine days. He is survived by a widow and an infant son.

James Armitt, member of the firm of James Armitt & Son, manufacturers of silk ribbons, who operated a mill at Paterson, N. J., died at his home in that city at the age of 66 years.

Jacob Loewenthal, president of the Liondale Bleach, Dye & Print Works, Rockaway, N. J., died at the Ansonia Hotel, New York City. He is survived by two sons and a daughter.

Rufus A. Soule, president of the Soule Mill, also a director of the Butler Manufacturing Co., both of New Bedford, Mass., died at his home in that city at the age of 74 years. Heart failure was the cause of his death. Mr. Soule was in the shoe manufacturing business for many years and was formerly chairman of the Massachusetts State Senate. He was one of the wealthiest men in New Bedford. He is survived by his wife and three children, Rufus A. Soule, Jr., of New York, Mrs. Garry De N. Hough and Mrs. Alexander T. Smith of New Bedford.

Isaac B. Stein, senior member of the firm of Stein & Sondheimer, manufacturers of neckwear at Philadelphia, Pa., died at the German hospital from an attack of appendicitis, at the age of 35 years. He is survived by a widow and three children.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year. Communications for this department are invited. There is no charge made for printing notices of new mills, enlargements, improvements, etc.

COTTON.

New Mills.

*Canada, Quebec, Three Rivers. Machinery is now being installed in the plant of the new St. Maurice Valley Cotton Mills, Ltd. This company was organized about a year ago with capital stock of $1,250,000 to manufacture fine white cottons on 900 looms. The new plant adjoins the property of the Wabasso Cotton Company, Ltd., and the two plants will be operated under the same management.

*Georgia, Dalton. The question of building a new cotton mill at Phelps, five miles south of here, has been decided on favorably by the stockholders of the Crown Cotton Mills and the building of the projected mill is now assured. Several months ago a large tract of land was purchased at Phelps between the Western and Atlantic and Southern Roads. The transmission lines of the Eastern Tennessee Power Company run within a short distance of the property, and will be available for power. Geo. W. Hamilton and F. T. Hardwick, president and treasurer, respectively, of the Crown Cotton Mills will head the new company.

*New Jersey, Newport. A mill is under construction for the Bell Cotton Fabric Co., which was organized several months ago to manufacture Turkish towels, Terry cloth and damasks. The foundation has been completed. Robert E. Bell, president and buyer, expects manufacturing will be started about March 15 with 40 looms. Equipment will include a bleaching department for their own goods and for the trade, also steam and electric power equipment. The capital stock of the company is $50,000. Previous reports of this enterprise have been given under Bridgeton, N. J.

*North Carolina, High Point. Buildings will be erected in the spring for the new Highland Cotton Mills, Inc., and manufacturing will be started about August. Hosiery yarns from 10s to 20s will be the product. This mill will be controlled by the Piedmont Mills Co. and the High Point Hosiery Mills and practically all the product will be used by them. 12,000 spindles with preparatory machinery, electric power equipment, etc., will be installed. J. H. Adams has been elected president, J. E. Millis, treasurer, and L. R. Gilbert, superintendent. Mr. Adams will attend to the buying.

*North Carolina, Lexington. The new 25,000-spindle, 700-loom mill will be controlled by Erlanger Brothers of New York, manufacturers of B. V. D. men's underwear, and George W. Montcastle, president of the bank of Lexington. The company will be known as the Bel-Vi-Dere Mills. The plans of the company include an increase to 40,000 spindles and 1,000 looms within a short time after the new plant is running and the construction of another mill of 40,000-spindle capacity within a few years. According to the best information the mill buildings will be of brick construction embracing all modern features of mill arrangement and equipment and a model mill village will be built up. Negotiations are now being carried on in regard to building of spur tracks to the mill site. It was noted a week ago that J. E. Sirrine has been engaged to prepare plans, and arrangements have already been completed for some of the equipment.

*North Carolina, Maysville. Work will be started on a mill for the recently incorporated Maysville Cotton Company the latter part of February, and at the completion of the building 5,000 spindles for spinning various grades of yarns will be installed. A man at present employed as superintendent in a North Carolina mill has been engaged to act as manager. The company has capital stock of $100,000. E. L. Mattocks is president; R. L. Jenkins, treasurer, and John C. Bauman, managing director. Bauman & Brown of Maysville are the financial agents.

Pennsylvania, Philadelphia. Royle & Craven have leased a portion of the O'Neill Mills, at Oxford and Josephine Sts., Frankford, in which they have installed a number of looms on which they are manufacturing a line of cotton quilts. Mr. Craven was formerly a member of the firm of Wood & Craven, which was recently dissolved, Mr. Wood continuing in business at 4060 Orchard St.

Enlargements and Improvements.

*Alabama, Alexander City. Work has been started on the foundation for the new building for the Russell Manufacturing Company, which is being built to double the spinning department. It will be completed and equipped during the spring months. It was noted a week ago 5,016 spindles will be installed.

Alabama, Anniston. Contract has been awarded by the Adelaide Mills for 1,600 spindles. 10s to 20s hosiery yarns on cones are manufactured.

Alabama, Huntsville. A large cotton warehouse is to be built by the Merrimac Manufacturing Company.

Alabama, Oxford. The Southern Mills Corporation has installed spinning frames to make single yarns from 3s to 10s, put up in skeins, tubes and cones. They are also installing twisters.

*Alabama, Stevenson. When the small addition which is being built to the plant of the Stevenson Cotton Mills is completed, a number of spoolers, twisters and winders will be installed.

No spinning equipment will be added. Cotton yarns are manufactured on 3,200 ring spindles.

Connecticut, Danielson. The capital stock of the Connecticut Mills Company is now $550,000. It was stated in a previous report that they are installing a considerable increase and expect to make further increases during the year. Fine Sea Island and Egyptian cotton fabrics are manufactured. The New York office is at 374 Broadway. Tracy S. Lewis is president and treasurer; R. J. Caldwell, vice president; R. L. Fisher, assistant treasurer, and W. B. Fittz, secretary and manager.

*Georgia, Eatonton. A two-story addition 180 by 75 ft. is being built for the Imperial Cotton Mills, and an addition will be made to the equipment, including 6,200 spindles and 160 looms. This will double the plant.

Georgia, Hartwell. There is a probability that the Hartwell Mills will double their capacity later in the year. Definite plans have not been made. Eight thousand spindles and 200 looms are operated at present.

*Georgia, Macon. Work has been started on the new 18,000 spindle mill for the Bibb Manufacturing Company by the Grey-Wirmer Construction Company of St. Louis. It has been noted previously that the new mill will be of brick and reinforced construction, 350 by 75 feet. The machinery will be driven by electric power from the lines of the Central Georgia Power Company.

Massachusetts, Fisherville. The first installment of 300 new fancy looms has been received by the Fisher Manufacturing Company, and this machinery is being set up in the new weave shed.

Mississippi, Water Valley. The Yocona Mills have had plans prepared for an addition which will be equipped for dyeing and winding. This company manufactures yarns, twines and cords on 4,000 spindles and 1,200 twisting spindles.

*Mississippi, Yazoo City. Increases are being made by the Yazoo Yarn Mill which include the installation of 1,500 spindles, 2 cards, 2 fly frames and 2 winders. The steam power plant is to be overhauled and increased to carry this additional machinery. The equipment will be installed in the present buildings and will be started on hosiery yarns.

New Hampshire, Manchester. Two new buildings are being erected for the Amoskeag Manufacturing Company. A new cotton storehouse is being built on the west side of the river, and a filter building where water for the dye house and bleachery will be treated is under construction where the old coal shed stood.

Pennsylvania, Philadelphia. The John W. Kershaw Co., operating 71 looms on Turkish towels at 25th and Callowhill Sts., have started up a branch mill at 23rd and Hamilton Sts., in which they have installed 20 looms. Arnold Kershaw is in charge.

*Rhode Island, Lonsdale. Good progress has been made on the work of rebuilding the part of No. 4 Mill of the Lonsdale Company which collapsed last September, but it will be several weeks before the operation is finished. The work has proved to be much more extensive than it was first anticipated.

*South Carolina, Chester. Enlargements being made by the Eureka Cotton Mills consist of adding 2,560 spindles to the present equipment, making a total of 25,344 spindles, and 100 looms, giving a total of 600 looms. The weave shed is being enlarged to accommodate the 100 additional looms.

South Carolina, Greenville. The Mills Manufacturing Company contemplates enlargements which will greatly increase the capacity of the plant, but no definite decision has been reached. Fine twills and fancies are manufactured on 31,000 spindles and 820 looms.

South Carolina, Rock Hill. The Arcade Cotton Mills are planning to add a number of automatic looms during the coming year. Alex Long is president and treasurer.

South Carolina, Whitney. An additional building is to be erected by the Whitney Manufacturing Company and equipped with 10,000 spindles. This concern manufactures standard sheetings on present equipment of 20,000 spindles and 650 looms.

Tennessee, Englewood. Electric power equipment is to be installed throughout the Eureka Cotton Mill. Recently electric equipment was installed in some of the departments.

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Mills Starting Up.

North Carolina, Charlotte. The plant of George A. Howell & Sons which was damaged by fire in October, 1911, will soon be in operation. It contains 3 sets of cards and 1,280 mule spindles, operated on cotton upholstery yarns.

*South Carolina, Blacksburg. W. C. Hamrick will be president and D. C. Ross secretary of the Broad River Mills. The new concern has acquired the old Whittaker Cotton Mill and is overhauling it and installing new machinery.

Texas, Post City. The Postex Cotton Mills will be equipped and ready for manufacturing about April 1. Electric power will be purchased from the Post Power Company. It has been noted in early reports that this company was organized by C. W. Post of Battle Creek, Mich., to manufacture cotton sheeting and to bleach, finish and launder the product. H. W. Fairbanks of Post City is vice-president and manager.

WOOLEN.

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New Mills.

Massachusetts, Boston. The Middlebrook Wool Combing Company has been incorporated with capital stock of $250,000 by John W. Coggeshall and Joseph A. Middlebrook of Winthrop, Mass., under the laws of Rhode Island. In the Dec. 27 issue it was stated that a mill has been secured at 310 Border St., E. Boston, and will be equipped with 12 worsted cards and 10 combs for commis-

sion combing. Mr. Middlebrook was formerly secretary and manager of the Talbot Wool Company at Norton, Mass. Mr. Coggeshall is agent of the Riverside Mills of the American Woolen Company at Providence.

*Massachusetts, Lawrence. Ernest Lord & Son, the new concern which is establishing a worsted weaving plant at the corner of Broadway and Cross Sts., is not ready to begin manufacturing as yet. A line of high grade worsteds to be sold under the name "Brittany Fabrics" will be made. The concern is composed of Ernest Lord, who was formerly employed by the Nemasket Worsted Mills at Middleboro, and his son, Robert E. Lord.

Pennsylvania, Philadelphia. Under the name of John Bromley Manfg. Co., John Bromley & Sons, Lehigh Ave. below Front St., are starting up a number of looms on men's wear and dress goods, woolens and worsteds, with W. Jowett, formerly with the Salts Textile Co., in charge.

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Enlargements and Improvements.

*Canada, Ontario, Almonte. The shoddy plant of the R. W. Lee, Ltd., which was destroyed by fire some time ago, is being rebuilt. This work is almost completed. Hirst Taylor is the manager.

Canada, Ontario, Bancroft. The Bancroft Woolen Mills which were burned in January, 1912, have been rebuilt and equipped with one set of cards and 5 looms.

*Connecticut, Coscob. Increases are being made by the Miamus Manufacturing Company by enlarging the plant from 6 sets to 8 sets and from 36 broad looms to 48 broad looms. To do this it was necessary to erect an addition, 4 stories high, 40 by 60 ft. They are installing electric drives sufficient to take care of the increase. Plush lap robes and plushes are manufactured.

Maine, Old Town. Five new sets of cards are being installed in the Ounegan Mill of the American Woolen Company, replacing old cards. Electric power equipment is also being installed.

*New Hampshire, Tilton. Forty looms are to be installed in the addition being built to the Tilton Mills. The company now has 10 sets of cards and 44 broad looms, which will be increased to 84 looms when the new installation is completed. Work on the addition, which is to be 40 by 80 ft., of wood construction, was started a few days ago. Arthur S. Brosn is president, treasurer and buyer, and Victor P. Thewlis is the superintendent.

New Jersey, Camden. B. F. Boyer & Co., manufacturers of worsted yarns and woolen yarns, are having erected a new building in which they will install a number of machines for dyeing skein yarns. David Davidson, formerly with the Rutholt Dye Works of Philadelphia, will be in charge, according to report.

*New York, Albany. Several months ago plans were prepared for an addition to the plant of the Albany Felt Company, manufacturers of papermakers' felts and jackets. The recent increase in the capital stock from $150,000 to $450,000 is to provide for the projected enlargements, although it is understood that they do not contemplate awarding contracts before summer at the earliest.

North Carolina, Elkin. An enlargement is to be built to the plant of the Chatham Manufacturing Company and contract has been awarded to R. L. Poindexter of Elkin. Cotton and woolen blankets are manufactured.

Pennsylvania, Philadelphia. The Arbeco Mills Co., Allegheny Ave. below Front St., manufacturing tapestries, curtains, covers, drapery fabrics, etc., have recently started up a department in which they are manufacturing a line of men's wear and dress goods, woolens and worsteds.

Pennsylvania, Philadelphia. It is reported that Hirst & Roger Co., manufacturers of tapestry and velvet carpets and rugs on 75 looms, at Kensington and Allegheny Ave., will in the early spring erect a new dye house in which they will install a line of machinery for the dyeing of skein yarns.

Pennsylvania, Philadelphia. David McDowell, manufacturer of ingrain carpets with 45 narrow and 10 broad looms at 1811 N. Howard St., is enlarging his equipment by the installation of a number of new looms at the corner of Howard and Berks Sts.

Pennsylvania, Reading. At the annual meeting of the stockholders of J. G. Leinbach Company, Inc., manufacturers of woolen cloth, which is made up by them into pants, it was voted to continue the work of remodeling and reequipping the mill until the plant has the best facilities possible for their class of work. In the next few months the steam power plant will be reequipped and enlarged. Recently new looms were installed and at the present time a new addition is being built.

*Pennsylvania, Reading. The addition being built for J. G. Mohn & Bros., manufacturers of wool hats, is to give more room generally. They do not know as yet whether new machinery will be installed.

Rhode Island, Hope Valley. Eight new looms are being installed in No. 2 mill of the Mystic Woolen Company.

*New Hampshire, North Salem. The interests that have leased the mill formerly occupied by the old Atlas Manufacturing Company have cleaned up the property and are putting in machinery. The mill will be operated under the style of the New Hampshire Shoddy Company.

New Jersey, Gloucester. The Breslin Brothers Company has been chartered with authorized capital stock of $1,000,000 to manufacture carpets. The new company will operate the plant of Fries-Harley Company which was purchased by Thomas J. Breslin at the sale last November. Mr. Breslin has been connected with A. & M. Karagheusian at Freehold, N. J.

Pennsylvania, Norristown. The Woodstock Mills on DeKalb St., recently reported by us as to be sold by the receivers during the latter part of

December, has been bought in by John J. McClosky, wool, waste and machinery dealer on Front St., above Market, Philadelphia. William Spink, shoddy manufacturer of Manayunk, and W. R. Taylor, the present manager of the mills. The purchase price is reported as $2,500 above the mortgage of $29,500. The sale includes both the mill property and machinery. The plant will be continued in operation by its new owners. Cassimeres, dress goods and cloakings are manufactured and sold through New York.

Rhode Island, Greenville. A charter has been granted the Smithfield Worsted Mills with capital stock of $75,000. John E. Quinn, John Hefferman, J. J. Dwyer and D. F. McWilliams are the incorporators. These men recently purchased the Greenville Woolen Mills, and will begin manufacturing at an early date. It is understood they will make improvements in the property and add some new machinery.

*Rhode Island, Oakland. The Glengarry Mills, Inc., has begun manufacturing. This company took over the Whipple Mills.

Virginia, Laurel Mills. The Rappahannock Woolen Mills Company has rebuilt its plant and resumed manufacturing. This company's original mill was burned in May, 1912.

KNIT.

New Mills.

*Canada, Ontario, Hamilton. Thomson & Smith, the trade name under which John Penman, Richard Thomson and Harold G. Smith, all formerly of Penman's, Ltd., are at present operating, is merely a temporary name which is being used while the business is being organized. A charter will be secured under the name of the Mercury Mills, Ltd., with capital stock of $1,000,000. Mr. Thomson will be general manager and treasurer; Mr. Smith, assistant general manager and agent; A. C. Marsh, superintendent. Probably Mr. John Penman will be president. The complete equipment will be 130 to 150 knitting machines, 100 sewing machines, and both cotton and woolen yarn machinery. Details of the yarn departments have not been worked out. Men's, women's and children's hosiery, seamless and full fashioned, and men's underwear will be manufactured, beginning during the present month. The plant is located at 80 Park St., N.

*Indiana, Evansville. The Evansville Hosiery Company has been incorporated with capital stock of $10,000 by R. E. Losey, F. Marvin Austin and others. It was reported last week that a plant of 15 knitting machines has been established at Olive and Canal Sts.

*Michigan, Bay City. A hosiery knitting plant has been established at 1116 Garfield Ave. by the Amonica Knitting Works, a new concern organized several weeks ago. Lines of men's, women's and children's cotton, wool, merino and mercerized hosiery are being manufactured on 10 knitting machines and one sewing machine. A dye house has been equipped and product is finished and sold direct. William Hanson is president, and Anthony Miller is treasurer, superintendent and buyer.

New Hampshire, Lakeport. A knitting plant to manufacture astrakhan, stockinette and eiderdown fabrics has been established here by Fred M. Swain, formerly of Methuen, Mass., William T. Swain and Charles H. Perkins of Laconia. The office is at 175 Mechanic St., Lakeport.

New Jersey, Union Hill. The Atlas Knitting Mills have established a plant at 124 Main St. with equipment of 8 circular knitting machines and 12 sewing machines, making boys' sweater coats. They use 5s and 10s single cotton, 2/20 and 2/26 worsted. The incorporation of this company was reported last week with capital stock of $15,000. I. Rogosin is president and J. Epstein, treasurer, superintendent and buyer.

*New York, Oswego. The Oswego Textile Company, incorporated a few days ago with capital stock of $25,000 to take over and operate the mill built by James A. Shufelt, has organized with W. H. Spanswick of the Wm. H. Spanswick Manufacturing Company, Fulton, N. Y., as president, and James A. Shufelt as treasurer and buyer. Manufacturing will begin this month with 32 knitting machines and 48 sewing machines, piece dyeing equipment, electric power, etc. Tatum, Pinkham & Greey will be the selling agents. Capacity is 500 dozens of children's ribbed underwear daily.

Pennsylvania, Philadelphia. The Union Knitting Mills of Pa., Inc., David Frankel, president, and D. Rabinovitch, treasurer, are about to start up a plant for the manufacture of sweater coats with eight knitters. A location has not been decided upon. The production will be sold direct.

Pennsylvania, Philadelphia. The Majestic Knitting Mills of Pennsylvania, with H. Schorr, formerly of the Modern Knitting Mills, as superintendent, have started up a plant at 253 South 5th St., in which they will manufacture a line of knitted neckties of silk. Eight knitters and one sewing machine are being installed and will be operated by electric power. The production of the plant will be sold direct.

Pennsylvania, Philadelphia. The Delphia Knitting Mills, with George J. Wolf as manager and Chas. J. Sutphen as superintendent, have equipped a plant at the N. W. corner of 2nd and Poplar Sts. with 18 knitters and one sewing machine on which they are manufacturing a line of high grade knitted neckwear. They are selling direct.

*Pennsylvania, Philadelphia. The Acme Knitting Company, in addition to making a line of silk neckties, will make infants' woolen hosiery and novelties. They have commenced operations with 7 knitters and one sewing machine but state that an enlarged equipment will be installed at a later date. The capital stock is $5,000. Joseph T. North is president and superintendent, H. T. Lilley, treasurer.

*Pennsylvania, Pottsville. John Yaissle, recently reported interested in equipping a plant for

the manufacture of women's knit underwear, will begin manufacturing with 6 knitting machines and 3 sewing machines on ribbed vests.

Tennessee, Englewood. A new company has been organized under the name of the Englewood Manufacturing Company to manufacture knit goods. The mill is to be erected and the promoters hope to begin manufacturing by the middle of the summer. The capital stock of the new concern is $50,000. R. H. Hicks, J. M. Wilson and L. A. Copenhaver are interested.

*Tennessee, Harriman. Steam power equipment is being installed in the new Harriman Hosiery Mills. A school has been established here to instruct operatives, and it is expected that when the plant is completed a good supply of help will be available.

Utah, Logan. Edw. N. Stone, 393 W. 3d North St., has fitted up a plant for the manufacture of sweater coats and plans to add the manufacture of underwear, purchasing knit webbing.

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Enlargements and Improvements.

Canada, Quebec, Shawinigan Falls. The Shawinigan Knitting Company, Ltd., has ordered 11 new knitting machines and 22 sewing machines. This will increase the production to 600 dozen underwear garments per day.

Illinois, Chicago. Twelve more knitting machines have been installed in the plant of the Phoenix Knitting Mills, a new concern which began operation a few months ago. This gives an equipment of 27 flat knitting machines operated by electric power on hosiery. The address is 2451 W. North Ave.

Illinois, Champaign. Although only partly finished the new mill of the Textile Manufacturing Company is being used for knitting. The company's original mill was destroyed by fire a few weeks ago.

Illinois, Chicago. The Child's Welfare Garment Company, 2445 Lincoln Ave., is arranging for the construction of a mill especially designed for their lines of work. A. W. Kindt is president, R. A. Hoefer, vice-president and manager, and Charles B. Kindt, secretary and treasurer.

Indiana, Mishawaka. The Mishawaka Woolen Manufacturing Company has purchased an entire block of property and it is stated that the buildings will be removed to provide room for a modern office building and other improvements.

*Maine, Houlton. The Houlton Woolen Mill is sold up for several months on its lines of sweaters, mittens, gloves and underwear, and it is reported will add new equipment, increasing from 15 to 23 knitting machines.

Minnesota, Minneapolis. Eventually large improvements will be made at the plant of the Northwestern Knitting Company. The three original buildings are to be torn down and new buildings erected in their place. These old buildings, two of which have been made into practically one building, are three stories high and will be replaced by five-story buildings of brick, steel, and concrete construction. It was noted recently that the capital stock has been increased to $3,000,000 and the Vassar Swiss Underwear Company of Rochelle, Ill., acquired.

New Jersey, Morristown. The Common Sense Suspender Company has taken over and will continue the business of John E. Dakin, a small manufacturer of silk hosiery at New Brunswick. The plant will be moved to this city, and the business conducted under the name of the Crown Hosiery Company. Mr. Dakin will become a stockholder in the Common Sense Suspender Company, and continue to manage the hosiery business. Additional knitting equipment is to be installed to manufacture fashioned hosiery and seamless goods, but particulars of increases have not been worked out. The capital stock of the Common Sense Suspender Company is being increased from $25,000 to $100,000.

*New Jersey, Newark. The Rivoli Silk Hosiery Company, manufacturers of men's and women's full fashioned silk hosiery, are arranging for equipment so as to resume manufacturing at 401 Mulberry St. as early as possible. Their plant was burned in December.

New York, Broadalbin. At the annual meeting of the stockholders of the Broadalbin Knitting Company, Ltd., plans for enlarging and increasing the business in the near future were discussed, and it was voted to offer the remainder of the treasury stock to the stockholders. A few months ago the power department was increased with the idea of building an addition to the plant during this year, to accommodate several new sets of cards and jacks Plans for this enlargement have been prepared and work will be started at the discretion of the directors. The old officers were reelected.

*New York, Valatie. New machinery being put in by the Adhesive Gimp Manufacturing Company consists of 9 knitting machines, loopers, etc. The knitting department of the Adhesive Gimp Manufacturing Company is known as the Pachaquack Knitting Mill. During this fall and winter they have put considerable new machinery in the knitting department and rearranged the entire plant. A building which has been used for a storehouse has been remodeled into a finishing room. They are in a position now to turn out 200 dozen sweater coats per day.

North Carolina, Chapel Hill. Contract has been awarded by the Durham Hosiery Mills for a new electric power plant which it has been reported would be equipped at the local mill.

*Ohio, Toledo. The Dolphin Hosiery Company has moved into the new 3-story factory building at Mulberry and Summit Sts. The capital stock was recently increased from $20,000 to $50,000 and the capacity is to be increased. Cotton half hose is manufactured.

Pennsylvania, Bally. Edwin Grim, the new owner of the Bally Hosiery Mill, is installing new

hosiery knitting machinery. An addition is being erected and recently the steam power plant was increased. Men's half hose is the product. It is reported that Mr. Grim will employ about 50 additional hands when improvements now planned are completed.

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Mills Starting Up.

Pennsylvania, Huntingdon. At the sale of the hosiery plant of Harvey E. Funk the property was purchased by W. E. Swigart and Mrs. G. W. Fisher for $3,400. A corporation will be organized to take over the property and operate the mill, of which the principal stockholders will be Mr. Swigart, Mrs. Fisher and C. J. Speck of Mill Creek, who will move his plant here and consolidate it with the Funk plant and have active charge of the business. It is expected that the mill will be running within a few days.

Pennsylvania, Philadelphia. The Lehigh Silk Hosiery Co., located in the Lomax Building, at Jasper and Orleans Sts., which has been shut down due to financial troubles, is about to start up again, the company having been reorganized, the creditors consenting to a settlement of their claims on a basis of 60 per cent. They manufacture full fashioned silk hosiery.

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Mills Shutting Down.

Pennsylvania, Doylestown. Harvey L. Scheetz, proprietor of the Harvey L. Scheetz Company, manufacturer of men's seamless and children's hosiery, has sold a large part of his equipment to the May Hosiery Mills, Nashville, Tenn. The balance of the equipment will be disposed of and Mr. Scheetz will retire from business.

Wisconsin, Manitowoc. The plant of the Manitowoc Knitting Company has been shut down and the stock has been purchased by the Wisconsin Knitting Mills. This is a small plant equipped to manufacture sweaters and similar goods.

SILK.

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New Mills.

*New Jersey, Paterson. The United Throwing Company, reported incorporated a week ago with capital stock of $25,000, will be connected with the Aronsohn, Bloom Silk Company, manufacturers of broad silks at 99 Cliff St. Further particulars of equipment and location cannot be secured at this time.

Pennsylvania, Archbald. A mill is being built on Main St. for a new company headed by Paul Clemens, until recently manager of the Paul Clemens Silk Manufacturing Co., of Scranton. The building will be 2 stories high, 128 by 38 ft., of brick construction. Fifty-eight looms will be installed at first for weaving broad silks and it is expected that manufacturing will start about April 1. Application has been made for a charter for the Clemens Silk Company with capital stock of $25,000. Benj. Phillips will be president and Mr. Clemens will be treasurer, manager and buyer. The machinery will be operated by electric power.

*Pennsylvania, Green Lane. The new silk mill being erected for the Hill Silk Manufacturing Company, Paterson, is nearly completed. Only part of the dress silk equipment will be brought here at first.

*Pennsylvania, Shamokin. The Perfect Silk Throwing Company, incorporated last week with capital stock of $20,000, has been organized to take over the throwing plant which it was reported last fall would be established by C. H. Knepka, formerly superintendent of the plant of J. H. & C. K. Eagle, Inc. A commission silk throwing business is done on 5,000 spindles, operated by electric power, in a mill on Kohl St. J. E. Knepka has been elected president and C. H. Knepka, treasurer, superintendent and buyer.

*Pennsylvania, Walnutport. Within a week everything will be in readiness to start up the new silk mill, located on the first and second floors of the Walnutport fire house. Forty-two looms have been received and are being set up as fast as possible. The new company is known as the Walnutport Silk Company. Elvin Zellner is president, Herman Feldhege, general manager and treasurer, and Oscar Wagerley, vice-president.

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Enlargements and Improvements.

New York, Binghamton. J. & D. D. Miller Company, manufacturers of broad silks, have increased their capital stock to $150,000 and increased the equipment from 60 looms to 90 looms. The plant is running to full capacity.

New Jersey, Paterson. The Schadell Silk Company is moving its equipment from the Todd Mill to the Ward St. Mill. Twenty-four new looms are being added.

New York, Brooklyn. Lockwood, Greene & Company, Boston, are preparing plans for a new mill for the Champlain Silk Mills, to increase the facilities for the operations that are carried on in the Brooklyn plant of this concern.

Mills Starting Up.

*New Jersey, Paterson. The Taylor-Friedsam Company, reported incorporated a week ago with capital stock of $200,000, and which it was reported several months ago would be organized to install a ribbon plant in the new Rosenheim Mill, has begun manufacturing with 50 ribbon looms. John G. Taylor has been elected president, Morris Friedsam, treasurer and Herman Bertschy, superintendent and buyer.

Rhode Island, Pawtucket. The Bengal Silk Mills of Central Falls have taken over the plant formerly operated by the Imperial Silk Mill Company in Pawtucket, and will run it as an annex to the Central Falls plant.

MISCELLANEOUS.

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Canada Ontario, Brantford. The business of the Farmer's Binder Twine Company, Ltd., is being wound up. They have been manufacturing binder twine with a production of 5 tons per day.

*Canada, Ontario, Guelph. The factory buildings for the new plant of the Dominion Linen Manufacturing Company, Ltd., have been completed and the machinery has all been transferred from the old factory at Bracebridge.

New Publications

(Any work noticed under this head can be obtained through the office of this journal.)

Heaton's Annual; The Commercial Handbook of Canada, 1913; edited by Ernest Heaton and J Beverley Robinson; 400 pages, 4 1/2 by 7; Heaton's Agency, 32 Church St., Toronto, Canada. Price $1.

The 9th edition of this annual has recently appeared. It includes the following features which have appeared in preceding issues, the present edition having been carefully revised and brought up to date: Official Directory, Correspondence, Financial Information, Commercial Regulations, Registration Offices, Credit Reports and Collections, Transportation, Customs Information, Descriptions of Towns and Local Opportunities, General Information, Agricultural Districts, Tables, Index of Opportunities.

The Principles and Practice of Textile Printing; E. Knecht, Ph. D. and James B. Fothergill, technical chemist and colorist; 604 pages, 6 by 8 1/2; J. B. Lippincott Co., Washington Sq., Philadelphia, Pa. Price $10.50.

New developments in chemistry and practice of dyeing and printing make this work particularly welcome, as it provides textile printers with a comprehensive and up to date hand-book of the art. The work is a sequel to the well known "Manual of Dyeing" and has been prepared with the same care and thorough knowledge of the subject that mark the earlier work. The following abstract of the table of contents shows the scope of the work and the order in which the various sub-divisions are arranged: Methods of Printing, Preparation of the Cloth for Printing, Preparation of Colors for Printing, Treatment of Goods after Printing, Mordants, Styles of Printing, Finishing of Printed Calicoes, Wool Printing, Silk and Half-Silk Printing. The volume contains 93 illustrations in addition to a large number of samples of Printed fabrics.

Textile Design and Color; by William Watson, superintendent and lecturer in textile manufacture at the Royal Technical College, Glasgow, Scotland; 360 pages, 5 1/2 by 9 1/4; Longmans, Green & Co., New York. Price $2.50.

This work is devoted exclusively to single fabrics, the subject of double cloths being reserved for the second volume which is to follow. The first nine chapters deal with weave construction. These are followed by chapters on color in weave effects, and hand jacquard designing, the following being an abstract of the table of contents: Classification of Woven Fabrics, Limitations in Tappet and Dobby Shedding, Weaves Constructed upon Sateen Bases, Fancy Twills, Construction of Simple Spot Figure Designs, Elementary Weaves and Fabrics, Rib and Cord Structures, Stripe and Check Weave Combinations, Color Theories and Phenomena, Application of Color, Jacquard Machines and Harnesses, Jacquard Figured Fabrics, Composition of Designs, Half-Drop Designs, Drop-Reverse Designs, Sateen Systems of Arrangement, Construction of Designs from Incomplete Repeats, Figuring with Special Materials.

Analysis of Organic Coloring Matters (Analyse des Matieres Colorantes Organiques; by Frederic Reverdin; 56 pages, 6 1/2 by 9 1/4; Georg & Co., Geneve, Switzerland.

The Commission Internationale d'Analyses in 1910 decided to study the means by which the methods of analyzing artificial coloring matters could be made uniform. The work was referred to a sub-commission and the report of the results are given in this pamphlet, the subject being considered under the following heads: Part 1. Historical Sketch of Artificial Dyestuffs. Part 2. Principal Methods of Analysis. Part 3. Reports from the Different Countries. The report of the sub-committee was read at the International Congress of Applied Chemistry, held in New York last September, and was followed by the adoption of resolutions directing the work of the sub-committee to be continued.

The Cotton Plant in Egypt; by W. Lawrence Balls; 202 pages, 5 1/2 by 8 1/2; MacMillan & Co., New York. Price $1.60.

The author, who is a botanist in the Egyptian Department of Agriculture, gives in this volume an account of the researches made upon cotton plants in Egypt. It is especially intended for "botanists who are more botanical than economic," but will naturally prove of interest to the larger number of botanists who are more directly interested in the economic side of their work. The following is an abstract of the table of contents: Fertilization, Cytology and Embryology; Development and Environment. The Cotton Fiber; Fluctuation, Commercial Varieties, Natural Crossing, Heredity, Economics.

Cotton Waste; by Thomas Thornley; 278 pages, 5 by 8; Scott, Greenwood & Co., London, England.

This work will be of especial interest to the large number who dispose of waste as a by-product as well as to those who use it as a raw material. It gives a description of the processes and machinery used in the cleaning, opening, carding and spinning of cotton waste, the subjects being considered under the following heads: The Production, Characteristics and Regulation of Cotton Waste; Treatment of Best Cotton Wastes in Cotton Spinning Mills; The Opening and Cleaning of Cotton Waste; the Carding of Cotton Waste; Final Spinning Machines for Cotton Waste; The Use of Cotton Waste Yarns in Weaving; Various Notes.

Cotton Facts; Shepperson Publishing Co., New York; 153 pages, 4 1/2 by 7. Price $1.

We have received the last edition of Cotton Facts, the valuable little handbook of the cotton trade, which was published by the late Alfred B. Shepperson during his lifetime and is now being

issued by the Shepperson Publishing Co. The book contains the same features that marked the previous issues, the data having been brought up to date.

Manufacturing in Philadelphia 1683-1912; by John J. MacFarlane; 97 pages, 6 1/2 by 9 1/2; published by the Philadelphia Commercial Museum.

Beginning with the building of the first grist mill in Philadelphia in 1683 this book gives a brief historical sketch of the development of various industries at that place. This is followed by illustrated references to the principal manufacturing plants in the city at the present time. There is an instructive chart showing the relative importance of the various manufacturing lines, woolen and worsted goods coming first, with the products valued at $54,900,000. Another chart gives a comparison of the textile industry of various cities throughout the country, Philadelphia being far in the lead with products valued at $153,000,000, Lowell being second with a value of $70,000,000.

Weaving (Die Weberei); by Prof. Ernst Graebner; 321 pages; 5 1/2 by 8 1/2; Dr. Max Jaenecke, Leipzig, Germany. Price $3.

This work is divided into five parts; the first deals with textile raw materials; the second, with yarn calculations; third, with weave construction; fourth, preparation of warp and filling yarn; fifth, the weaving process itself. It contains over 700 illustrations of weave drafts, weaving machinery and weaving appliances. The author has made a special effort in the second part to simplify Continental textile calculations, but the chapter is marked by the usual confusion due to the customary use of diverse weights, measures and yarn counts. The text is in German.

BUSINESS LITERATURE

Dobbies; The Crompton & Knowles Loom Works, Worcester, Mass.

This is a catalogue describing and illustrating the various types of dobbies built by the Crompton & Knowles Loom Works. These include the single index dobby, double index dobby, double cylinder dobby with rocking attachment, single-acting dobby, suspender loom dobby, dobby for haircloth looms, auxiliary cylinder dobby, harness levelling device, selvage lettering dobby, dobbies as attached to automatic looms, dobby drive for plain lay looms, harness, box and multiplier chains, leno motion, independent selvage motion, chain saving device, two-weave attachment, floor blocks and direct springs, spring jacks, and dobby rack.

Grosser Knitting Machine Company, Max Nydegger, 260 West Broadway, New York.

A comprehensive catalogue illustrating and describing the essential features of over sixty different knitting and special machines manufactured by leading foreign builders designed for the economical production of high grade knit goods.

The catalogue is divided into four parts: Part 1 is devoted to flat knitting machines of the flat bed latch needle type. Hand knitting machines as well as semi and full automatic power machines are described with the specifications for each machine. Part 2 is devoted to spring needle knitting machines of the "Cotton's" patent system. Herein are described the full fashioned hosiery machines and the full fashioned underwear and jersey machines of the Hilscher type as well as ribbed type machines of the same make. Part 3 treats on finishing machines for fashioned and seamless goods and includes seamers, loopers and linking machines. Part 4 is devoted to warp knitting machines, one section treating on latch needle and the other on spring needle machines. This extensive line of machinery covers all the requirements for the manufacture of sweater jackets, fancy knit goods, golfing goods, gloves, mufflers, scarfs, athletic knit goods, plain and fancy full fashioned hosiery, full fashioned fine underwear, bathing suits, jerseys, Shaker sweaters, underwear and necktie novelties of all kinds. The catalogue is a splendid example of fine engraving and typographical work. The details of cuts are brought out with remarkable clearness and an interesting feature is, that the pictures of the machines show the fabrics in process of knitting with such clearness that the character of the goods for which the machines are adapted is readily discernible. Besides the illustrations of the machines there are interesting pictures of the large works abroad where these different types of machines are built, views of the New York offices and repair shops of the Grosser Knitting Machine Company and a number of valuable tables. Every manufacturer who is now or expects to be making the classes of goods which these machines are designed to manufacture, should have a copy of this catalogue for reference.

The Beattie Nonpareil Loopers; The Beattie Mfg. Co., Cohoes, N. Y.

A catalogue describing and illustrating the Nonpareil two thread loopers manufactured by the Beattie Mfg. Co. The looper is shown without a trimmer and also complete with a trimmer. There is an illustrated price list of parts. Prices are also given for the looper.

Textile Trade Marking Machinery; Parks & Woolson Machinery Company, Springfield, Vt.

One of the chief difficulties that confronted the manufacturer who desired to identify his goods up to a recent date was a suitable method of stamping his trade mark on the fabric expeditiously, attractively and conspicuously with a minimum of labor. The Parks & Woolson Machine Company has been giving attention to this subject and have in the last few years developed a line of machines which are suited to every requirement of the trade-marking process. This new booklet which they have recently published describes these machines, shows the various purposes for which each one is adapted and gives many samples of trade marks used with their machines. It also shows reproductions in colors of trade-marked fabrics showing how clear and uniform the impressions are. This booklet will

interest every manufacturer who wishes to identify his products and who may not have realized the perfection that this trade-marking process has now reached.

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Best's Key Ratings of Fire Insurance Companies; A. M. Best Company, 100 William St., New York, N. Y.; price $5.00.

The object of this volume is to furnish for quick reference a list of all the stock fire and marine insurance companies licensed anywhere in the United States with statistics and reference showing at a glance the financial condition, transactions and reputation of the companies included. To those who carry a line of insurance it is very important that they should know the standing of the companies. Insurance costs about the same regardless of the grade and it has been the habit of manufacturers to trust the placing of their insurance to their brokers on the assumption that all insurance companies are equally good. This is a mistake, as this little book shows.

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Digest of Workmen's Compensation Laws; prepared by the National Association of Manufacturers and the Manufacturers' Association of Connecticut; price 25 cents.

Recognizing that workmen's compensation has come to stay and that uniformity of legislation can be best promoted by general knowledge concerning the laws enacted in the different States, the National and Connecticut Associations of Manufacturers decided to issue this compilation of laws and distribute it at a nominal price. Mistakes in legislation, as in other matters, are presented by knowledge, and it is to be hoped that this digest will be studied carefully by all classes of manufacturers to the end that this recent development in legislation may be directed wisely throughout the country. The library edition is sold for 25 cents a copy; paper cover, 15 cents; paper cover in quantities, 10 cents a copy. Orders may be sent to the National Association of Manufacturers, 30 Church St., New York, or 706 Locust St., St. Louis, Mo.

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Sternberg Motor Trucks; Sternberg Mfg. Co., Milwaukee, Wis.

This is an attractive catalogue calling attention to the various types of motor trucks built by the Sternberg Mfg. Co. The booklet will be of especial value to textile manufacturers owing to the rapidly increasing interest in the use of trucks for transporting materials and merchandise in the textile trades. The Sternberg line includes many different models of trucks adapted for the various requirements of manufacturers and merchants.

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The Townsend Mfg. Company has taken over all the interests of the Grauer Mfg. Company at Hatfield, Pa. and will continue the manufacture of lacings and edgings for underwear. The only change is in the title of the company, the management being the same as heretofore. The selling agent is E. W. Jenkins, whose associate is Ralph Byram. The Philadelphia office is at 229 Church St.

CALENDARS FOR 1913

The Wisconsin Textile Mfg. Co., Two Rivers, Wis., manufacturers of hosiery boards, glove and mitten forms and other wood novelties, are sending out to the trade a unique calendar in the form of a wooden wine glass with the slogan "Brimful of Good Wishes for 1913."

E. O. Spindler, 350 Broadway, New York, have issued a very attractive calendar on which is mounted a view of Mont Collon in colors.

A very beautiful wall calendar has been issued by Speed & Stephenson, 170 Summer St., Boston, Mass. It shows a very beautiful reproduction by color photography of the painting by Lillian Cheviot of a lion in the jungle entitled "A King of the Desert."

Alfred Suter, 200 Fifth Ave., New York, is sending out to the trade a very unusual wall calendar showing his scales for testing fabrics.

The Dinsmore Mfg. Co., Salem, Mass., builders of mill sewing machines and supplies, are sending out an attractive calendar on which is shown in colors a canoe riding the rapids and entitled "A Steady Hand at the Helm."

Martin Hosiery Mills, Raleigh, N. C., manufacturers of full seamless hosiery, have issued a beautiful calendar on which is shown one of Henry Hutt's bathing girls and entitled "She Wears Martin's Hose."

The Alpha Knitting Co., Allentown, Pa., manufacturers of children's, are sending out to the trade an attractive calendar suitable for either home or office.

The Farbwerke-Hoechst Company, manufacturers and importers of Aniline and Alizarine colors, are sending out to their customers and friends a New Year's reminder in the form of a desk pad calendar. There is a separate sheet for every day in the year and each sheet has some special word of reminder of their business. This huge company employs over 7,000 workmen in their Hoechst plant in Germany alone. About 200 chemists are employed there constantly under salary, seeking new methods and improving old ones.

The Saco-Lowell Shops sent out at the first of the year a useful calendar tablet for desk use. It has a separate sheet for each week with a space for memoranda, which is attractively printed and conveniently bound for service.

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The estate of Robert Knight, the largest individual cotton manufacturer in the world, is estimated to be valued at $50,000,000. As there was no will administrators were appointed and the estate will be divided among his children and heirs at law. Two sons, Webster and Prescot Knight, and two daughters, one the wife of Dean Rousmaniere of Boston, and Miss Edith Knight, survive and are the chief heirs of the estate.

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North Carolina, Gastonia. An addition 75 by 120 ft. will be built to the plant of the Clara Manufacturing Company and 3,700 spindles with preparatory equipment will be installed.

Industrial Notes

A REMARKABLE BELT RECORD

Those who have been through a brick plant and realized the immense amount of grit that is constantly flying about, sticking and eating its way into the various equipment, can appreciate the significance of a letter just received by the Gandy Belting Co. from the Bessemer Fire Brick Co. of Birmingham, Ala. The main drive belt at this plant is an 8-ply 26-inch Gandy, and has been in operation for over 27 years, during which time the plant has not been shut down, except for repairs to the machinery. In the early part of this month the driving belt pulled out at the old lace holes, where they formerly used leather lacings and later changed to belt hooks. This is the first time the belt has given the least trouble in the manufacture of over 140,000,000 fire bricks that have been turned out during its service. The owners are simply splicing on a new piece of belt to repair the damage, and the belt has continued in service and looks good for a long time to come.

WILL MAKE HEAVY CHEMICALS

The Seydel Mfg. Company, Jersey City, N. J., is now well established in its large new factory. It is increasing its line of products by the manufacture of some high grade heavy chemicals and C. H. Furgang has been placed in charge of this department and will give his time to that branch of the business.

FORT MADISON, IOWA

The growth of the manufactures of the middle west has been remarkable in the last ten years and the completion of the great dam on the Mississippi River at Keokuk will give an impetus to the territory in the heart of the Mississippi Valley for it will make cheap power available in a section within a radius of 100 miles or more from that center. Fort Madison is one of the nearest cities to the big dam and is wide awake to its opportunities. It has gone about the development of the city in a systematic way, wisely seeking the best professional advice. In November they retained the services of Messrs. Lockwood Green & Company, the well known industrial and mill engineers, to determine the advantages of the city from the manufacturers' standpoint. Albert L. Scott of that firm has submitted a report covering the points which an interested manufacturer would wish to know.

Fort Madison is located on the Mississippi River, at the point where that river is crossed by the A. T. & S. F. Railway. It is also served by the C. B. & Q. It has about eleven thousand inhabitants, nearly all of them white, and mostly of German and Swedish descent. The city has city water, a sewerage system, gas, electric lights and trolley, and is located, furthermore, about fourteen miles from the site of the new hydraulic development to create 200,000 electrical horse power now being built by the Mississippi River Power Company.

On the labor situation Mr. Scott has this to say:

"Your city has a labor supply which is descended from the best kind of laboring stock, namely: early German and Swedish immigrants.

The chief demand upon your labor supply at the present time is from the A. T. & S. F. Railway Shops, employing about 660 men; S. & J. G. Atlee, whose lumber mill employs about 250 men; the Fort Madison Plow Company, employing 125 men; the Brown Paper Company, employing about 40 men; and other miscellaneous industries employing possibly 100 or more. The only employers of girls are the Fort Madison Button Company and the Fort Madison Canning Company; these two concerns employ more or less irregularly, possibly 100 girls.

"It will be seen, therefore, that the industries of your city are such that the men are employed, but there is no adequate employment for the girls and women. Probably 250 women could be had at a reasonable wage, almost instantly, and five hundred might be secured by a manufacturer without much effort.

"The wages paid to common labor in Fort Madison run from $1.75 to $2.25 per day for men, and for girls they run from $4.00 to $10.00 per week, with an average of possibly $6.00 per week. This comparatively low wage is made possible by the low cost of living. Five-room single houses can be had for from $8.00 to $12.00 per month; these houses are equipped with running water, electric lights and gas. A little larger house, with six rooms and bath, can be had for an average price of $20.00. Since the city is in the center of a rich farming country, food can be had at much lower prices than prevail in larger manufacturing centers.

"The State of Iowa has hitherto been very favorably disposed toward manufacturing enterprises in the matter of taxation. For example, the State does not assess on the value of the finished product of a manufacturing plant but only on the cost of the raw material entering into the product. The present tax levy is 88.5 mills on an assessment of 25 per cent. of the valuation. It is likely that a remission of city taxes for a certain period might be secured for a permanent industry.

"Rates on coal in Fort Madison are the same as those of other towns in that territory, so that power can be produced by coal as cheaply as anywhere in that general locality. Electric power can be had after July 1, 1913, from the Mississippi River Power Company, and the nearness of Fort Madison to power-house insures a rate which will be attractive. The rates of the Mississippi River Power Company have not been published, but it is expected that they will be low enough to offer substantial inducements to a manufacturer using a large quantity of power to locate in Fort Madison."

Messrs. Lockwood Greene & Company sum up the situation as follows: "We should say that Fort Madison was well adapted at present to industries which require girl and woman labor, up to the point of using five hundred hands, and it

could also support an industry which required not over one hundred men from its present floating supply of male labor. That it would be an admirable place for an industry requiring large quantities of electric power. That it would be well suited for an industry which could utilize transportation. That it is well suited to an industry which needed to market its products in the jobbing centers of St. Louis, Kansas City, St. Joseph, Chicago, and the Twin Cities, being for practical purposes, about equi-distant from all of them, on main lines of communication. For manufacturers looking for sites for industries which would fit into the above mentioned advantages, we should recommend Fort Madison."

The Fort Madison First Association invites correspondence from interested parties.

MODEL NEW PLANT OF H. W. JOHNS-MANVILLE CO. STARTS OPERATIONS WITH NEW YEAR

The completion of the new plant of the H. W. Johns-Manville Company, at Manville, N. J., marks another important chapter in the history of this enterprising concern.

Beginning with the consolidation of the H. W. Johns Mfg. Company and the Manville Covering Company, in 1901, the H. W. Johns-Manville Company has grown by leaps and bounds until today it ranks as the largest concern in the world engaged in the manufacture of asbestos and magnesia products.

The new Manville plant consists of nine buildings, which, together with their products, are classified as follows: A—Textile and Packing. B—Rubber plant; Electrical Specialties and Printing Department. C—Pipe Coverings. D—Paper Mill. E—Magnesia. F—Roofing. G—Mastic and Waterproofing. H—Roofing Coatings. Power Plant and Pump House.

These buildings represent the most advanced ideas in fireproof construction, being of brick, steel and concrete, with roofs of J-M Asbestos Roofing. They are planned not only for safety but to afford the best operating conditions for the employes. The "daylight" form of construction which is employed throughout permits a flood of light to enter the buildings through large triple-unit windows placed close together. The walls, ceilings and uprights are coated with J-M Fireproof Cold Water Paint. Artificial illumination is provided in the form of J-M Linolite Lamps and Frink Reflectors.

The hygienic conditions of this plant are ideal. Healthful ventilation is furnished by means of steel ventilating sash which provides a constant supply of fresh air without causing drafts. Owing to the judicious arrangement of the machinery, there is an entire absence of the crowding and confusion which, in many factories, serves to hamper the operators in their work.

Each building has an average length of 1,000 feet, and is a separate factory in itself capable of being operated as an independent unit without relation to the other buildings in the group. The total combined floor area of all the buildings is about 1,000,000 square feet.

H. W JOHNS-MANVILLE CO.'S NEW PLANT AT MANVILLE, NEW JERSEY, FLOOR SPACE 1,000,000 SQUARE FEET. THE LARGEST ASBESTOS PLANT IN THE WORLD.

Power is furnished by the Company's power plant which consists of the latest type of General Electric turbo generators, six Babcock & Wilcox high-pressure water-tube boilers aggregating 5,000 h. p. All steam pipes are insulated with J-M Asbesto-Sponge Felted Covering in order to effect a maxifum saving of fuel. The power and lighting cables, instead of being strung on overhead poles, as is generally the case in factory installations, are led underground through J-M Fiber Conduit, thereby eliminating cable troubles for all time.

The buildings are heated by exhaust steam conveyed underground from the power plant through pipes laid in J-M Sectional Conduit.

The new plant is located on a picturesque tract

of 320 acres, divided by the Raritan River, in the town formerly known as Findern, N. J., but which name was changed to "Manville." The Company's private railroad system, comprising 5 miles of tracks, connects directly with the Central Railroad of New Jersey, the Lehigh Valley and the Philadelphia & Reading Railroad, thereby insuring excellent shipping facilities.

These railroads have made preparations to operate special work trains to and from Manville for the accommodation of employes who live in nearby towns.

About 3,000 men will be employed at this new plant, making a total of about 7,000 who are now employed by this Company.

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"SIZEOLEUM"

When mixed with Arabol starch, corn starch, or potato starch, "Sizeoleum," manufactured by The Arabol Mfg. Co. of New York, makes a most satisfactory sizing for cotton warps, shirtings, domestic and print cloth warps. It is especially recommended for the South, as it has the advantage of resisting the influences of the climate.

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SACO-LOWELL SHOPS IN PERMANENT BOSTON OFFICES

The executive offices of the Saco-Lowell Shops are now removed to permanent quarters at 77 Franklin St., Boston, where the executive officers, Messrs. R. P. Snelling, treasurer, F. J. Hale, general manager and J. C. Howe, vice president, may be found.

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CANADIAN ORDERS

Robert W. Gormly & Company, Troy, N. Y., who are well and widely known as experienced builders of knitting machinery, report business in a very satisfactory condition. Their spring needle machines have not only a great capacity, but a wide scope in texture, being able to knit from the finest to the coarsest work. Among the recent orders and shipments which they report are the following: Thompson & Smith, Hamilton, Ontario, Canada, ten machines; Penman Company, Paris, Canada, eight machines and Galt Company, Galt, Canada, four machines. The product of this company is of the highest class and the repeat orders which this company receive is evidence enough of the high standard and quality of their product.

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A NEW STORAGE WAREHOUSE IN READING

Although Reading, Pa. is a great center for the knit goods trade and other textile establishments in the Schuylkill Valley, there has never been a first class modern storage warehouse for merchandise in that section until the erection of the Columbian Warehouse recently built at the corner of Fifth and Laurel Sts. in Reading. It is a seven-story structure 110 by 60 feet. The walls are of vitrified brick laid in cement. The skeleton framework is of steel and cased in vitrified concrete. The window frames in exposed places are of steel and wire glass lights. The floors are of solid construction, waterproof and capable of sustaining great weight and strain. The elevator service consists of two large Otis electric freight elevators. The building is equipped with an automatic sprinkler system and enjoys the lowest insurance rates. There is direct track connection with the Pennsylvania Railroad and cars may be loaded and unloaded under cover. Drays and wagons are also sheltered from the weather when unloading. Not only is the building conveniently located to receive railroad freight, but its central location makes it very convenient for storage of local merchandise. Household goods and furniture, explosives, inflammables and other hazardous articles, which are likely to contaminate either the building or other merchandise in the warehouse are not accepted for storage, the idea being to devote this building exclusively to the storage of merchandise and new goods.

This warehouse supplies a need on the part of manufacturers, merchants and jobbers in that section and the management intends to take every precaution to meet the requirements of this class of trade.

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PROFIT SHARING WITH EMPLOYES

The Clipper Belt Lacer Co., of Grand Rapids, Mich., are carrying out an unusually effective plan for sharing the profits of the business with the employes. The company was organized over four years ago for the manufacture of the Clipper belt lacer, with which our readers are familiar. The business grew steadily from the start and now gives employment to forty operatives, twenty of whom are girls who set the hooks into cards, the twenty men being employed in the machine shop. At first the girls who operated the carding machines were paid $7.50 a week. The company made a careful calculation and found that the setting of the hooks in cards was costing about ten cents a box and the girls were called together and the president of the company, Charles P. Foote, stated that in future the company would pay ten cents a box for carding the hooks. He also stated that this piece rate of ten cents a box would not be cut until the output of each operator exceeded thirty boxes a day, which is the full capacity of the machine. As a result of the new piece work system there is hardly an operative now earning less than $14 a week.

The new method has been so satisfactory to both employer and employe that it was recently decided to extend the piece work plan to other departments of the business and on Christmas each operative of the Clipper Belt Lacer Co. received a letter in which a ten dollar bill was enclosed as a Christmas present. The letter, which follows, outlines a system of piece work for the machinist and of profit sharing for all the operatives of the company:

"Beginning January 1st next we will put all departments (where practicable) on a piece basis, making it possible for all employes to use their heads as well as their hands to further their interests, increase their wages—and incidently our

business. We wish to assure them also that we will not lower the established piece prices regardless of the amount earned. Ever since the manufacture of the Clipper was started an accurate cost of every operation has been kept, and the price established for piece work will be based entirely on this cost, therefore making it not only possible for you to make exactly the wages you have been receiving, but to largely increase them with a little added effort. We have no doubt that the balance of our employes will do exactly as did the young women, rise to the occasion and make it possible for us to pay them much more in the year to come.

"But this is not all. A nine-hour working day will be established with Saturday half holiday during the entire year, without a reduction in pay. Also the management has felt for some time that employes so loyal and faithful, who had so large a part in making the business what it is, should share in its profits, and as a consequence has decided that beginning Jan. 1 next they should and on the following basis: All who at the end of 1913 have been with the company one year or less will receive 5 per cent. in cash of the amount they have been paid during the year. All who have been two years in our employ 6 per cent., three years 7 per cent. and so on 1 per cent. added each year until the amount has reached 10 per cent., where it will remain indefinitely—provided the profits for each year warrant it. This, you will notice, makes you profit sharers in the business and vitally interested in its outcome. You have we believe in the last year or more of service with us done all you could to further our interests. We hope in the year to come this added profit will be an incentive for greater care and effort on your part."

The proposition was favorably received by the operatives and it is expected to prove as great a success as the piece work plan has been in the card department. The executive staff of the company in addition to President Foote is John E. More, vice-president; Frank A. Stone, secretary and treasurer, and James K. Diamond, superintendent.

THE ECONOMY OF COMMERCIAL TRUCKS

The Kissel Motor Car Company has collected some astonishing records of the service of Kissel-Kar trucks in various cities. An interesting case is the city of St. Paul on account of its hilly nature and the severity of the winters. In St. Paul there are thirty KisselKar trucks in service ranging in capacity from 1500 pounds to three tons, no four or five ton Kissels having been sold in that city. These thirty trucks sent 145 delivery horses to the discard. They travel an aggregate daily mileage of 1,566, making 3,537 deliveries. The most significant feature of the case and the most gratifying from the standpoint of the truck man, is the comparative average of initial investment. The trucks, including several specially designed bodies, represent a total cost of $65,600. The horses replaced, including wagons, harness, blankets, etc., represented a layout of $62,150. This slight difference in first cost, taken in connection with the ability of the trucks to more than double their present mileage if worked a sufficient number of hours, is food for thought.

THE ELECTRIC DRIVE

The Sterling Cotton Mills, Franklinton, N. C., in arranging for electric drive throughout their mills, will install one hundred and twelve motors ranging from 5 to 75 h. p. and switchboard apparatus. A number of these motors will be direct connected by cloth gears. All the equipment will be furnished by the General Electric Company.

The Deep River Mills, Raudleman, N. C., will make addition to their equipment for electric drive consisting of a 250 kv-a. generator, one 50 kv-a. and one 20 kv-a. transformer, twenty motors ranging from 5 to 100 h. p., two generator and exciter panels, etc. All the apparatus has been ordered from the General Electric Company.

The Otis Company, Ware, Mass., will add to its power plant equipment a 1500 k. w. Curtis turbo-generator with 14 k. w. motor-generator exciter set. The apparatus will be furnished and installed by the General Electric Company.

The Jackson Co., Nashua, N. H., will install new power plant equipment consisting of a 1000 kva. Curtis turbo-generator. The unit is being built by the General Electric Company.

REMOVAL NOTICE

The New York office of Chris. Ellrodt, Jr., manufacturer of thrown and artificial silk, will be located after February 1 at Room 708, Emmet Bldg., 95 Madison Ave., corner of 29th St.

North Carolina, Burlington. The Glencoe Mills have purchased additional electrical apparatus for their Glencoe and Lakeside Mills. This comprises one 50 h. p., one 100 h. p. and one 10 h. p. induction motors; also a 5 h. p., a 10 h. p. and a 100 h. p. motors, two 10 k. w. transformers and switchboard. The apparatus will be furnished by the General Electric Company.

Pennsylvania, Mill Creek. The Mill Creek Hosiery Mill owned by C. J. Speck will be moved to Huntingdon and the machinery installed in the mill formerly operated by Harvey E. Funk. Mr. Speck will have charge of the plant at Huntingdon.

Pennsylvania, New Cumberland. J. C. Ewing is retiring from the J. C. Ewing Underwear Company and the business will be conducted in the future by Bayles & Moffet. They will probably change the name of the plant to Elkbrook Knitting Company. The mill is equipped for manufacturing women's and misses' union suits and was formerly known as the Pennsylvania Underwear Company.

Pennsylvania, Philadelphia. The Roxborough Knitting Mills are removing their plant from 2nd St., above Chestnut, to a building at 720-28 South 11th St., where they have secured about 14,000 sq. ft. of floor space. They are installing 15 flat and 10 round knitting machines and 30 sewing machines, which they are operating on shaker and half-fashioned sweater coats

Recent Textile Patents

ASTRAKHAN FABRIC, Artificial. 1,048,145. Nathan Garfinkle, Paterson, N. J.

BOBBIN STRIPPER. 1,048,324. Warner B. Leathers, Atlanta, Ga.

BOBBIN-STRIPPER. 1,048,802. John T. Brazell, Lanett, Ala.

BUTTONHOLE-Cutting Mechanism. Edward B. Allen, Bridgeport, Conn.

CARDING-ENGINES, First-Combing Machine for. 1,050,751. Theodore F. Poiret, Paris, France.

CARDING MACHINE. 1,049,475. Peter Hardman, Willimantic, Conn.

CLOTH-CUTTING Machine. 1,050,307. Adolph Spielman, Philadelphia, Pa.

CLOTH-FINISHING Machine. 1,049,248. Edwin H. Marble, Worcester, Mass.

COMBING MACHINE. 1,051,362. Eugen Alisy, Chemnitz, Germany.

DYEING-VAT-CLOSING Device. 1,049,322. Clarence P. Delahunty, West Pittston, Pa.

DYEING VEGETABLE Fiber. 1,047,923. Gustav C. Dorr, Frankfort-on-the-Main, Germany.

EMBROIDERING Machine, Jacquard. 1,048,782. Robert Zahn, Plauen, Germany.

EMBROIDERING Machine, Shuttle. 1,049,026. Robert Zahn, Plauen, Germany.

FABRICS, Turned-Under Edge-Binder for. 1,049,120. Alfred F. McCollum, Bloomsburg, Pa.

FLAX for Obtaining a Product Adapted to be Spun Like Carded Woolen Yarn, Treatment of Waste. 1,051,124. Adolf Kube, Walditz, Germany.

KNITTED FABRIC. 1,050,120. Simon Friedberger, Philadelphia, Pa.

KNIT FABRICS, Machine for Uniting. 1,050,432. Edwin O. Davis, Paducah, Ky.

KNITTING a Full Fashioned Blank for a Stocking. 1,048,572. Karl Nebel, New York.

KNITTING MACHINE Driving Mechanism. 1,049,553. Frank Wilcomb, Norristown, Pa.

KNITTING MACHINE Web Holder. 1,048,965. Joshua D. Hemphill, Central Falls, R. I.

KNITTING MACHINE, Circular. 1,049,020. Frank Wilcomb, Norristown, Pa.

KNITTING MACHINE Web Cutter, Circular. 1,048,879. William Raven, Leicester, England.

KNITTING MACHINE Driving Mechanism. 1,050,787. George L. Ballard, Norristown, Pa.

KNITTING MACHINE, Circular Spring-Needle. 1,050,970. James McNamee, Amsterdam, N. Y.

KNOT-TYING Device. 1,051,155. James P. O'Connell, Crompton, R. I.

LOOM, Narrow-Ware or Ribbon. 1,048,540. George F. Hutchins, Worcester, Mass.

LOOM SHUTTLES, Thread Stripper for. 1,048,538. Patrick Hunt, New Bedford, Mass.

LOOMS, Pile Cutting Attachment for. 1,049,891. Alfred F. McCollum, Bloomsburg, Pa.

LOOMS, Filling-Thread-Cutting Mechanism for Weft-Replenishing. 1,048,591. Eppa H. Ryon, Waltham, Mass.

LOOMS, Filling Guide for. 1,047,945. Robert Jamieson, Hopedale, Mass.

LOOM-TEMPLE, Thread Cutting. 1,049,458. Edward A. Cunniff, New Bedford, Mass.

SHUTTLE THREADER. 1,047,957. Herbert L. Litchfield, Southbridge, Mass.

SHUTTLE, Hand Threading. 1,048,662. Jean B. Daudelin and E. H. Daudelin, Fall River.

SPINNING MACHINE. 1,048,920. Fritz Watzlawik, Schoeneberg, Germany.

SILK, Preserving Tin-Weighted. 1,051,157. Ernest Meili, Hawthorne, N. J.

SPOOL and Implement Holder. 1,049,021. David C. Williams, Wilkeson, Wash.

SPINNING, Process of. 1,051,361. George C. Young and Martin M. Waddell, Ballymena, Ireland.

TEXTILE MACHINE. 1,050,762. Howard D. Colman, Rockford, Ill.

TWISTING MACHINE. 1,050,786. Samuel Y. Austin and Roy Dallis, Lagrange, Ga.

TWISTING MACHINE. 1,050,786. Samuel Y. Austin and Roy Dallis, Lagrange, Ga.

WARPING MACHINE. 1,048,580. Festus S. Rand, Providence, R. I.

YARN GUIDE. 1,050,850. Claes Ryden, Providence, R. I.

YARN GUIDE and Clearer. 1,048,830. William T. Harrington, Fall River, Mass.

YARN GUIDE. 1,049,798. Frank D. Babcock and Festus S. Rand, Providence, R. I.

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RECENT TEXTILE TRADE-MARKS REGISTERED

61,565. Cotton and woolen shirts. Mark: The Magnet. Owner: Kahn Bros. & Co., Chicago, Ill.

63,118. Cotton piece goods. Mark: R. B. Owner: Richard Borden Mfg. Co., Fall River, Mass.

63,831. Lawns. Mark: Linoflax. Owner: H. T. Boyd & Co., New York.

64,112. Woolen piece goods. Mark: Washington Whitcord. Owner: American Woolen Co., Jersey City, N. J.

66,223. Cotton piece goods. Mark: Pamilla. Owner: Pacific Mills, Lawrence, Mass.

66,959. Bleached muslin. Mark: Advertiser. Owner: The Ferguson McKinney Dry Goods Co., St. Louis, Mo.

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